



MIPTON *Paint*™

THE MANUAL

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PHOTON *Paint*TM

THE MANUAL

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Introduction

WHAT IS PHOTON PAINT?

Photon Paint is a full-featured Hold And Modify (HAM) paint program for the Commodore Amiga line of computers. It specifically utilizes the unique HAM protocol, which allows all of the possible 4096 colors accessible on the Amiga to be used on screen at one time.

Many of the features and techniques associated with other popular Amiga paint programs are combined within PHOTON PAINT, including those previously limited to EITHER a 32 color paint program, OR a HAM paint program; for example:

- Real-time operation of freehand drawing tools.
- The ability to paint in exactly the chosen color, regardless of background color, and to choose between painting the exact color, or allowing HAM to modify it according to the background and adjacent colors.
- Three types of fill functions: the standard flood fill, which fills all adjoining pixels of the selected color area; boundary fill, which enables the user to fill an area surrounded by a specific color, and free-shape fill which allows you to outline a free-hand drawn shape to be filled; each having the option of customized blending functions.
- All popular brush operations, including flipping, resizing, rotating, and tilting (perspective).
- Blend mode, allowing blending of a brush or shape with the background, and smooth, dithered shading.

Some additional features unique to Photon Paint include:

- The ability to move the menu containing the brush gadgets and color palette anywhere on the screen, or remove it entirely during painting operations; recalling it from the menu bar, or from the keyboard.
- Reducing the size of the brush and color palette menu during work by selecting a toggle gadget which alternately removes and replaces the lower (color palette) portion.

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- More sophisticated brush operations, including twisting, adjustable transparency, and mouse operated perspective tilting.
- Wrapping of brushes onto 3-D objects: both geometric and symmetrical free-hand drawn shapes (surface mapping), with optional light-source specification; setting of optional light-source intensity, and adjustable dithering of light-dependent shading.
- Special large fonts allowing specified light source shading; dithering; 3-D effect.
- Unique magnification window with built-in gadgets allowing variable sizing of the magnified pixels and scrolling around the magnified image in all four directions.
- Choice between transparent or opaque background color, selectable from the menu bar.
- 64 color palette display, with the ability to alter any color box on the palette without affecting the screen pixels previously painted using the color in that position; thus allowing the use of all 4096 colors in the same painting.
- Ability to create palette color spreads using BOTH the Red Green Blue (RGB) AND the Hue Saturation Value calculations.
- Ability to specify the 16 base colors in the Amiga's internal color registers; enabling the artist to select the group of colors which will be the basis for all HAM calculations.

ABOUT THIS MANUAL

I have attempted to make this manual as "user friendly" as I know how. Perhaps it will seem redundant to the truly "Amiga Literate" out there, who have purchased this program after having had extensive experience with this intricate computer, and with other paint programs, but I hail all too recently from the ranks of those artists who were learning to use their very first personal computer, and were confounded by the cryptic and ambiguous explanations given in many manuals.

I do try to take you by the hand and guide you clearly through the steps of each different operation; looking for the best way to describe things so they cannot be misinterpreted. I remember all too well reading my first manual wherein someone told me to, "click inside the 'Watchamacallit' Gadget", and I sat there asking myself, "Click what? With what?",

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and, "Which button do I use?", or, "Why doesn't that requester go away?." My most intelligent purchase was a modem...all those kind and helpful souls on the BBS's... but then there was the manual for the telecommunications program...(sigh). It was an experience.

This manual explains each subject on the Main Menu bar in order, from left to right, with a chapter devoted to each different menu. I concentrated on explaining each subject as completely as possible, sometimes having to repeat portions of the explanations pertaining to other functions which interact, so that a user would not have to search through different portions of the manual to put together pieces of the puzzle (another pet peeve from the past!).

The last chapter will consist of as many tutorials as I can write before either: 1. My deadline, or: 2. I run out of ideas!

Happy HAMming,

Heidi Turnipseed



SYSTEM REQUIREMENTS

512 K RAM MINIMUM; 1 MEGABYTE RECOMMENDED FOR 320 X 400 MODE; EXTERNAL DISK DRIVE RECOMMENDED.

PHOTON PAINT will function properly in 320 X 200 resolution (non-interlaced mode) with a minimum of 512 K RAM. The program's architecture is segmented, allowing full functionality in lo-resolution on 512 K machines. A possible exception could be encountered when using the text function in very large font styles of approximately 60 pixels high or more.

Overlays will be read from the disk occasionally, depending upon the amount of available memory; therefore a second disk drive is recommended. This will enable the user to leave the program disk in the first drive (df0:), and maintain a separate data disk in the second drive (df1:) for saving artwork.

1 Megabyte is recommended if you intend to work in the 320 X 400 (interlaced mode) format. 512 K will be adequate for many functions, but some operations will be refused due to memory shortages, such as the "undo" function, and spare screen.

LOADING THE PROGRAM

Perhaps you are a seasoned user of the Amiga computer. If so, please bear with me as I guide those users who have perhaps purchased PHOTON PAINT as their first applications program with their new Amiga, or you can go on ahead and skip to Chapter Three.

Turn on your monitor, then turn on your Amiga's CPU (Central Processing Unit). After you have done so, a few "gronking" sounds will occur, followed by a picture of a hand holding a disk labeled, "WORKBENCH." Instead, insert your PHOTON PAINT disk. The WORKBENCH information is included on your PHOTON PAINT disk, and the program will then load properly.

The WORKBENCH screen will appear, which is blue with a white stripe at the top containing the words "Workbench Screen"; just below, to the right of the screen, you will see a small "icon" representing the PHOTON PAINT disk. Move your Amiga's "mouse" until you've positioned the arrow shaped pointer over this icon, and click the left button on

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the mouse twice, quickly. The icon will change it's appearance, indicating that it has been selected. You will then see a smaller, rectangular "window" appear, surrounded by a white border. It will contain an icon representing the PHOTON PAINT program. Position your mouse pointer over this icon, and click the left button twice, quickly. This icon, too, will change it's appearance, and the program will begin to load. More "gronking" noises, then a different screen will scroll into view for your enjoyment while the program finishes loading; this is our title screen. The final screen will be black with a colorful palette and drawing gadget "menu" at the top of the screen; now you are ready to paint in 4096 colors!

Certain aspects of the program will be accessed from the program disk in order to enable this complex paint program to operate in 512 K. If you do not have a second disk drive, leave the program disk in the first drive (df0:) until you wish to save a painting to a separate data disk; then switch for the saving process only, replacing the program disk afterward.

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Move your mouse pointer to the top of the screen, as far as it will go; then hold down the right (as opposed to "left") mouse button. A white stripe will appear (the "menu bar") containing several words: PROJECT, PREFS, BRUSH, FONTS and MODE. Each of these words designates the subject of a "MENU", which will appear beneath each word as you move the mouse pointer over it while holding down the right button. The word will also be highlighted in a lavender color. This first chapter will describe the functions of each of the items listed on the first menu at the left hand side of the menu bar: the PROJECT menu.

As you continue to press the right button and move your mouse pointer down over each word listed beneath the title, PROJECT, you'll notice that each word is highlighted in lavender, and when certain words are highlighted, an additional sub-menu will appear. Each menu item which contains a sub-menu has a right-pointing arrow to the left of the word. If selecting an item will call up a window in which you can enter data and/or make decisions, you'll see three dots to the right of the word. These menu and sub-menu items are selected by releasing the right mouse button while the pointer is located on top of the word, and it is highlighted. We will discuss each of them in order, top to bottom:

CLEAR:

Selecting this item will clear the screen completely. A requester will appear asking you if you really want to clear the screen; you must reply to this requester by positioning your mouse pointer in either the "yes" or "no" gadget and clicking the left mouse button once. Unless you have saved your work to a data disk beforehand, the picture on the screen will be irretrievably lost. The screen will be cleared, and the background color will become the currently selected background color on the palette. This color is selected by positioning the mouse over the desired color square and clicking the right mouse button. The right mouse button is always used to select the background color. The currently selected background color will then be surrounded by a dotted black and white border, and will fill the screen any time "Clear" has been selected from the Project menu. You can use the "del" (delete) key on the keyboard to perform this function if you prefer, without using the mouse. You will see this key represented across from the word, "Clear" on the Project menu.

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LOAD:

Selecting this item will bring up a window which reads "Load Picture" at the top. Right under this is a black bar labeled "Drawer". A "drawer" is the name of a directory in which paintings ("pictures"), have been saved. The name of such a directory must be entered into this black bar prior to attempting to load a picture from the data disk.

The program will automatically search the program disk, which is in df0:, and list it's directories, the names of which will all appear in the large, dark gray requester in the center of the window. A separate "Art Disk" has been included with the program package. If you have a second disk drive (df1:) insert the "Art Disk" there, and click the left mouse button while your pointer is located inside the gadget which reads "df1:." If you do not have a second disk drive, remove the program disk from df0: after the "load picture" window has appeared; then select the "df0:" gadget. This will cause the program to read the new disk in df0: and display it's directories in the requester. If you would like to load one of these sample pictures, move your mouse pointer over the (dir) Pictures, and click the left mouse button.

Once the (dir) Pictures appears, click the left mouse button while your pointer is positioned over this selection, and the name of the "Pictures" (dir) will appear in the black bar labeled "Drawer", preceded by the name of the disk drive on which it is located.

The titles of all pictures stored in the Pictures directory will appear in the large, dark gray requester. You can select one of these to load by placing your mouse pointer over it's title, and clicking the left button. The black bar labeled "Pattern" allows you to differentiate between listing all files in the drawer (by selecting the gadget with the "***") or listing only the files stored with appendix "*.Pic"). Notice that the name of the selected title now appears in the black bar labeled "File" near the bottom of the window. Now, if you click the left mouse button while the pointer is in the gadget which reads, "load," the window will disappear, and the selected picture file will begin to fill the screen.

The ESC (escape key) can be used to abort loading.

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Some of the picture titles may contain the addendum ".lace"; this indicates that the picture was created in the interlace mode, and the program will have to switch screen resolutions in order to load this picture (the program always boots up in non-interlace mode initially). Should you choose to load an interlace picture while the program is in non-interlace mode, a requester will appear asking you to verify your intention to change screen resolutions.

Two gadgets will appear on the bottom of the requester which read "Yes" and "No"; you must choose one of them by placing your mouse pointer inside and clicking the left button. This is a "Load prompt," and you can choose not to be prompted by de-selecting this option on the Prefs Menu. This will be discussed further in the chapter which describes the Prefs Menu.

Should you change your mind about loading a picture, just select the gadget which reads, "Cancel", and the window will disappear, returning you to the screen.

You can call up this window from the keyboard, without using the mouse, by holding down the left "Amiga Key" (the "Amiga Keys" are the two big red "A"s on either side of the space bar; the left one is solid red, and the right one is outlined in red), and typing "L" at the same time.

SAVE:

Releasing the right mouse button while this heading is highlighted will save the picture currently displayed on screen to the file name of the last picture which was loaded from disk. Notice that there are no dots following the word, "Save"; this indicates that no window will appear, and you cannot make any additional decisions; therefore, be certain that you have not switched to the spare screen after loading another picture, thereby saving a different picture under an incorrect file name, and writing over the original file! A requester which reads "Overwrite existing file?" will appear, and you must select "Yes" or "No." If in doubt, choose "No"; then select "Save As," which will bring up the window; then check the file name which is in the black bar labeled "File" before saving the picture on screen. You may select "save" without using the mouse by holding down the left "Amiga Key" and typing "S".

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SAVE AS:

Releasing the right mouse button while this heading is highlighted will bring up a window which is laid out exactly like the "Load" window, except that the gadgets at the bottom read "save" and "cancel". If you are saving a new picture for the first time, you will need to type the name of the new picture into the black bar labeled, "File" before selecting the "save" gadget. Just begin typing; the letters will automatically appear in the "File" bar. The "del" (delete) and "backspace" keys allow you to change your entry in the black bar prior to selecting "Save". You can call up this window from the keyboard by holding down the right "Amiga Key" and typing "A".

DELETE:

Releasing the right mouse button while this heading is highlighted will bring up a window which is laid out exactly like the "Load" window, except that the phrase at the top reads "Delete Picture", and the gadgets at the bottom read "Delete" and "Cancel".

If you wish to delete a picture, select it's title the way you selected a title to either load or save; then place your pointer inside the gadget which reads "Delete", and click the left mouse button. If you have changed your mind, and no longer wish to delete a picture file, select "Cancel". After selecting "Delete", one more little requester appears, giving you a last chance to change your mind; it asks, "Delete this file?", and you must select either "Yes" or "No."

PRINT:

Before selecting "Print" from the Project Menu, you need to return to the Workbench Screen and enter Preferences to select the printer driver for your particular printer; then select the other settings available on the Graphic Select screen.

Please refer to your Amiga User Guides for a complete description of the use of Preferences, and it's requesters and gadgets.

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To return to the Workbench Screen from the Photon Paint screen, select “—> Workbench” from the Prefs Menu by moving your pointer to the very top of the screen, holding down the right mouse button, moving down the menu to the word “—> Workbench”; then releasing the button while the word is highlighted.

Once you have set your printing parameters in Preferences, you can select “Print” from the Project Menu by moving your pointer to the very top of the screen, holding down your right mouse button, moving your pointer down to the word “Print”, and releasing the button while the word is highlighted.

THE FAST MENU:

The Fast Menu always appears automatically at the top of the screen when the program is first loaded, but can be made to disappear by:

1. moving the mouse pointer to the upper left corner of the menu, and clicking in the small square there (the “Close Gadget”);
2. moving the pointer all the way to the upper right corner and clicking the right mouse button;
3. pressing the “Help” or “F10” key on the keyboard.

THE FAST MENU CAN BE MADE TO REAPPEAR BY:

1. selecting “Fast Menu” from the Project Menu;
2. pressing the “Help” or “F10” key on the keyboard;
3. moving the pointer all the way to the upper right corner, and clicking the right mouse button.

The Fast Menu can be repositioned anywhere on the screen by placing the mouse pointer inside the light gray bar at the top, holding down the left mouse button, and dragging the Fast Menu to the location of your choice. A hollow rectangle will appear, having the same dimensions as the Fast Menu, and when this rectangle is in the desired spot, just release the left mouse button and the Fast Menu will reappear in it's place.

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Notice that the word "SCREEN" appears in the left side of the gray bar at the top of the Fast Menu. Placing your pointer inside this word and holding down the left button will enable you to pull the entire Photon Paint screen down, revealing the underlying Workbench screen.

The Brush Gadget:

To the right of the group of colored squares (palette), you will see a larger, gray, vertical rectangle containing two vertical rows of four shapes each.

These shapes represent the exact size and shape of each standard brush with which you can choose to paint. To select one of these standard brushes, place the very tip of the mouse pointer right over the little shape, and click the left button. To indicate the chosen brush, a little dark rectangle will then surround it, and the brush shape will become light gray. To select a color from the palette to paint using your chosen brush shape, position your mouse pointer over one of the colored squares in the palette and click the left button; now move the pointer onto the screen, and holding down the left mouse button, paint a line! If you want to remove the experimental squiggle you just created, click on the little square at the top right which reads, "un do".

NOTE: Background and Foreground Colors

The Foreground Color can be selected by:

1. positioning the mouse pointer over a small palette square containing the desired color, and clicking the left mouse button.

A white border will appear around the selected palette square, and the newly selected foreground color will appear inside the left half of the larger, vertically divided square to the right of the small palette squares;

2. Positioning the mouse pointer inside the left half of the large, vertically divided square to the right of the small palette squares, and clicking the left mouse button.

When you return the mouse pointer to the painting screen, the word "Pick" will extend beneath the crosshairs. Center the crosshairs over a pixel of the color you wish to select as the current foreground color, and click the left mouse button; the

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chosen color will now appear in the left half of the large vertically divided square, and in the palette square formerly selected as the foreground color.

Selection of the Background color is accomplished by:

1. positioning the mouse pointer over a small palette square containing the desired color, and clicking the right mouse button.

A dotted black and white border will appear around the selected palette square, and the newly selected background color will appear inside the right half of the larger, vertically divided square to the right of the small palette squares;

2. positioning the mouse pointer inside the right half of the large, vertically divided square to the right of the small palette squares, and clicking the left mouse button.

When you return the mouse pointer to the painting screen, the word "Pick" will extend beneath the crosshairs. Center the crosshairs over a pixel of the color you wish to select as the current background color, and click the right mouse button; the chosen color will now appear in the right half of the large vertically divided square, and in the palette square formerly selected as the background color.

Notice that your currently selected background and foreground colors are shown in the right and left sides, respectively, of the vertically divided square to the right of the small palette squares.

Likewise, when you wish to paint with the foreground color, hold down the left mouse button, and when you wish to paint with the background color, hold down the right mouse button.

All operations described below can be performed with either the foreground color or the background color as just described. To avoid a certain amount of redundancy, I have explained each tool using the procedure for painting with the foreground color. Simply substitute the right mouse button when wishing to paint with the background color.

The Free Draw Tool: ("d" from the keyboard)

Just to the right of the Brush Gadget are two horizontal rows of little squares which

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contain a series of little symbols. The Free Draw Tool is a little square with a freehand squiggle in it, and is the first square in the top row, just to the right of the Brush Gadget.

When the program first loads, and the Fast Menu initially appears, this tool will be automatically selected, as evidenced by the freehand squiggle appearing in light gray over a dark background. When you use the mouse to paint and draw with your selected brush and foreground palette color, the Free Draw Tool will reproduce the exact line you have created as you move the mouse.

Your freehand-drawn line will be the width of your currently selected standard brush.

The Dotted Free Draw Tool: (“s” from the keyboard)

Just below the Free Draw Tool is the Dotted Free Draw Tool, represented by a freehand curve composed of a series of one-pixel dots. With this tool selected, you will create a dotted line in the exact freehand path you draw with the mouse.

The size of the dots will be that of your currently selected standard brush.

Changing the speed at which you move the mouse will affect the spacing of the dots. You can alter the basic speed at which the mouse is handled by the program by selecting “—> Mouse Speed” in the Prefs Menu, and choosing “Fast”, “Medium” or “Slow” from the sub-menu which appears.

The Lines Tool: (“v” from the keyboard)

The second symbol in the top row represents the Lines Tool. It’s symbol is a straight, diagonal line. This tool enables you to draw a perfectly straight line between any two points on the screen.

First, locate the crosshairs of the mouse pointer in whatever spot you wish to begin drawing your straight line; then, continuing to hold down the left mouse button, move the mouse to whatever location you wish to be the end of the line. Notice that you can experiment; moving the mouse all over the screen, and a straight line between your point of origin and your current position will be maintained.

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As soon as you release the left mouse button, the straight line will freeze into place. Should you wish to cancel the temporary line prior to rendering it onscreen, click the right mouse button without releasing the left. Conversely, if you are using the right mouse button to draw your line with the background color, click the left button without releasing the right one to cancel the line.

Remember, if you are dissatisfied with the position of the line after it has been fixed into place, you can remove it from the screen by clicking on the "un do" gadget before performing any other operation, and try again!

The Arc Tool: ("q" from the keyboard)

Just below the Lines Tool is the small square representing the Arc Tool; when drawing with this tool selected, it is possible to position and create a mathematically computed arc of varying degrees between any two points.

First, as with the Lines Tool, place the crosshairs of the mouse pointer in your starting position, then, while holding down the left mouse button, find your ending position; then release the mouse button. This will result in a perfectly straight line between the two points, just like the Lines Tool... but you aren't through yet!

Move the mouse pointer around the straight line, and watch the curve change as if it was being pulled by a magnet. Now, when you are happy with a particular arc, just click the left mouse button to freeze it in place. Just as with the Lines Tool, a click with whichever button you are not holding down in order to draw the line, will cancel the line prior to placing it onscreen.

Again, if not pleased with the result, the "un do" gadget is your immediate and final recourse.

The Hollow/Filled Rectangle Tool:

("R" from the keyboard for filled; "r" for hollow)

Just to the right of the Lines Tool, in the top row of small squares is the Hollow/Filled Rectangle Tool; symbolized by a diagonally divided square which is hollow on top and solid below.

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In order to select either the hollow or the filled version, position the mouse pointer with the very tip located in whichever half of the square represents your choice, and click the left button.

If you have selected the Hollow Rectangle Tool, the gadget will display a light gray hollow square on a dark background; when you move the mouse pointer onto the drawing area, the crosshairs will have become a set of intersecting lines. The point at which these lines intersect will become one corner of the rectangle. Place the intersection of the lines wherever you would like to locate one corner of your rectangle; then hold down the left mouse button and pull the pointer away in whichever direction you wish. An outline of a rectangle will form, and you can alter its dimensions in any direction until you release the left mouse button, and freeze the image.

If you have selected the Filled Rectangle Tool, the entire operation is the same, except that the gadget will display a solid light gray square on a dark background, and a filled rectangle will result when you've completed the procedure.

The Hollow/Filled Ellipse Tool: ("e" from keyboard for hollow; "E" for filled)

The Hollow/Filled Ellipse tool is located just beneath the Hollow/Filled rectangle tool; symbolized by a diagonally divided oval which is a hollow outline above, and a solid shape below.

The procedures for selecting either the hollow or the filled versions are precisely the same as those for the Hollow/Filled Rectangle Tool; the drawing method differs in that the crosshairs will be located in the eventual center of the ellipse you create. When you hold down the mouse button and drag the crosshairs outward, the ellipse will appear and enlarge. The drawing process will commence when you release the mouse button.

The Hollow/Filled Circle Tool: ("c" from keyboard for hollow; "C" for filled)

The Hollow/Filled Circle Tool is located just to the right of the Hollow/filled Rectangle Tool; symbolized by the diagonally divided circle; hollow above; solid below.

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The methods of selection and drawing are identical with those pertaining to the Hollow/Filled Ellipse Tool.

The Fill Tool:

The Fill Tool is located just to the right of the Hollow/Filled Circle Tool, on the top row; symbolized by an irregular shape, half-filled with a solid color.

When selected by clicking inside its square, it becomes a light gray shape on a dark background. This tool enables you to fill an enclosed shape with the color of your choice.

There are three available methods of filling an enclosed shape:

1. **BACKGROUND FILL:** ("f" from keyboard)

In this mode, the chosen fill color will spread to all adjoining pixels which are the same color as the pixel on which the mouse pointer is placed when either button is pushed (left for foreground color; right for background color). The filling will stop when pixels of a different color are encountered on all sides of the fill area. This mode is automatically selected when you first click on the Fill Tool. When you move the mouse pointer into the painting area, the abbreviation, "BACK" will appear under the crosshairs.

2. **BOUNDARY FILL:** ("f" from keyboard twice - toggles with background fill)

In this mode, the chosen fill color will fill an area bounded by pixels of a chosen boundary color; covering up all other colors within the boundary area.

To select this mode, just click the left mouse button on the Fill Tool a second time, and the appearance of the tool symbol will change to a capital letter "B."

When you move the mouse pointer into the painting area, the abbreviation, "PICK BOUND" will appear under the crosshairs. To pick your boundary color, move the mouse pointer to a portion of the desired boundary; hold down the left mouse button and move the mouse pointer along the boundary line, watching the left side of the Fast Menu's foreground color box (the large, vertically divided rectangle to the right of the small palette squares); when you see the color of your boundary appearing in that left foreground color box,

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release the left mouse button. The foreground color box will revert to its former color, but the program will remember the color you selected as a boundary when you released the button. The abbreviation under the crosshairs will have changed to "BOUND." You can now select any color with which to fill your bounded shape.

3. FREE SHAPE FILL: ("d" from keyboard twice)

In this mode, the chosen fill color will fill an area bounded by a free-hand-drawn outline; covering up all other colors within the boundary area.

To select this mode, just click the left mouse button on the Free Draw Tool (the symbol of the little free-hand squiggle) twice, and the appearance of the tool symbol will change to a capital letter "F."

Choose the color with which to fill your free-hand-drawn shape; then hold down the left mouse button while creating the outline you desire. Release the mouse button when your outline is complete, and the shape will fill with your chosen color.

Each of the above fill modes will work with each of the four drawing modes selectable from the Mode Menu: "NORMAL," "BLEND," "ADD," and "SUBTRACT."

The Scissors/Lasso Tool: ("b" from keyboard)

1. THE SCISSORS TOOL:

You'll find the symbol of the scissors just to the right of the Fill Tool. Click on its square using the left mouse button; the scissors will appear light gray on a dark background, and when you move the pointer onto the painting area you'll find perpendicular lines intersecting at the center of the crosshairs. First, position the crosshairs at one corner of an area on the screen which you'd like to pick up and copy as a "brush". Then, holding down the left mouse button, move the crosshairs in any direction to surround the desired area. When you are satisfied with the placement of the resulting frame, just release the left mouse button, and the new copy will lift away from its former position in the painting without deleting the original.

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Should you wish to pick up a portion and remove it from the painting altogether, use the right mouse button. The "brush" which you've picked up can be repositioned anywhere on the screen and stamped down by clicking the left mouse button when you've placed the brush in it's new location.

You can jump to a clean spare screen by typing "J" on the Keyboard, and your custom "Pic Brush" will remain in memory and move there with you to be used in a separate work of art.

2. THE LASSO TOOL: ("b" from keyboard twice)

If you click the left mouse button twice on the scissors gadget, a symbol of a Lasso will appear, already selected; light gray on a dark background. Using this tool you can draw a freehand line around any portion of your artwork, and create a "Pic Brush" of any irregular shape.

The Undo Gadget: ("u" from keyboard)

At the far right end of the top row of tool gadgets is a square which reads "un do". This literally enables you to undo the last operation you performed on the painting. As soon as you click the left mouse button on this gadget, your most recent action will be undone.

1. MEMORY MANAGEMENT:

In circumstances where memory is running low (attempting memory intensive functions on a 512K machine), the program will disable the "un do" function in order to utilize the undo buffer.

In order for the user to have the option of maintaining the "un do" function even though the attempted memory intensive operation will be compromised, the option "Keep Undo" has been included in the Prefs Menu. When this option has been selected, an "X" appears inside the small circle to the left of the item.

If memory is insufficient to allow a particular requested function, and "Keep Undo" has been selected, the "un do" tool will appear in a reverse color scheme: light letters on a dark background.

The Pix Tool:

Just below the Undo Gadget is a square which reads "Pix." This tool enables you to transform portions of your painting into a mosaic effect by averaging the colors of existing pixels into larger pixels, or "pixelizing." When you click the left mouse button on this gadget, the word "Pix" will appear light gray on a dark background, and the title "Pixelize: 5" will appear in the Drag bar of the Fast Menu. The number "5" refers to the level of pixelization which will occur: the number of pixels averaged, and the size of the resulting pixels.

You can change the level of pixelization by using the "0" and the "-" keys on the numeric keypad to the right of your keyboard. The "-" key lowers the level of pixelization, and the "0" key increases it. The number following the word "Pixelize:" will change accordingly from "1" through "9."

Select the areas of your painting you wish to pixelize by holding down the left mouse button as you draw over them. You can change the level of pixelization "on the fly" by using the "-" or "0" keys during the operation.

The Restore Previous Brush Tool: ("B" from keyboard)

Just to the left of the Pix Tool, on the bottom row of tool gadgets, you'll see the symbol of a paint roller. This tool enables you to recall the last custom "Pic Brush" you created just prior to specifying one of the standard brushes from the Brush Gadget. Select this gadget by clicking on it with the left mouse button, and watch your last "Pic Brush" reappear!

1. MEMORY MANAGEMENT:

In circumstances where memory is running low (attempting memory intensive functions on a 512K machine), the program will disable the restore previous brush function in order to utilize the buffer in which the previous brush is normally stored.

In order for the user to have the option of maintaining the "brush" function even though the attempted memory intensive operation will be compromised, the

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option "Keep Brush" has been included in the Prefs Menu. When this option has been selected, an "X" appears inside the small circle to the left of the item.

If no previous brush has been stored in memory, the symbol of the paint roller in the little "tool Box" will be dimmed.

The Magnification Tool: ("m" from keyboard)

Just to the left of the paint roller, on the bottom row of tool gadgets, is the symbol of a little magnifying glass. Select this by clicking on it with the left mouse button; it will become light gray on a dark background, and when you move the mouse pointer back to the painting area, it will have become an identical little symbol of a magnifying glass. Position it at the approximate center of the area you wish to have magnified, and click the left mouse button.

The magnification window will appear on the screen, and if it happens to be behind the Fast Menu, you can easily reposition it by locating the mouse pointer over the "Drag Bar" (at the top of the window), and, holding down the left mouse button; dragging the window to a different position on the screen. You can also relocate the Fast Menu in the same fashion.

Once you have the magnification window in a convenient position, you can experiment with it's many features:

1. RESIZING:

In the lower right corner of the magnification window you'll find the Resize gadget. It looks like a smaller rectangle touching the upper left corner of a larger rectangle. Place the center of the mouse pointer right on this gadget, and, holding down the left mouse button, pull the corner of the window in any direction you desire, and watch the temporary outline of the window dimensions until you're satisfied, then release the left mouse button; the window will be redrawn.

2. SCROLLING:

Notice the four arrows in the upper right corner of the window frame. Clicking the left mouse button on any one of these arrows will move the window across the magnified image in the direction indicated.

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The four arrow keys on your Amiga's keyboard will also perform this function.

3. CHANGING THE DEGREE OF MAGNIFICATION:

The bottom of the window frame contains the gadgets provided to adjust the level of magnification within the window. To utilize the gadgets, just locate the center of the crosshairs over them and click the left mouse button. From left to right:

"—" and "+" will decrease or increase the amount of magnification, respectively.

Pressing ">" or "<" from the keyboard will each perform the increase and decrease operations, respectively.

"M" will produce another little magnifying glass symbol, enabling you to select another area of the painting to magnify by centering the symbol over the desired area, and clicking the left mouse button.

"Min" will reduce the image within the window to the minimum degree of magnification.

"Max" will increase the image within the window to the maximum degree of magnification.

"Mid" will adjust the image within the window to a degree of magnification in between "Min" and "Max".

"B" will correct the right-hand window border after drawing directly over it.

The Text Tool: ("t" from keyboard)

In the middle of the bottom row of tool gadgets is a square containing a capital "A"; this represents the Text Tool. Select it by positioning the mouse pointer inside the square and clicking the left mouse button; the letter will reappear in light gray on a dark background, and when you move the mouse back into the drawing area, there will be a small rectangle attached to the crosshairs. This rectangle represents the approximate dimensions of the letters within the set of fonts you will be using.

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The program boots up with the first standard Amiga font (Topaz 8) selected. When you wish to select from the entire available list, move your mouse pointer to the Main Menu bar at the top of the screen, and hold down the right mouse button to expose the Main Menu titles; move the pointer over to the title, "Fonts"; it will be highlighted in lavender; then, still holding down the right mouse button, move down to the second item on the list, "List Fonts"; highlighting it in lavender. Release the right mouse button; wait a moment; then go back to the Main Menu bar and use the right mouse button again to highlight the "Fonts" menu. You will see the names of all the other available fonts listed beneath the original subjects on the menu.

To select one of the other fonts on the list, follow the usual procedure and use the right mouse button to highlight the name of the desired font; then, still holding down the right button, move over to the choice of font point sizes on the sub-menu which appears, and click the left mouse button while your choice is highlighted. An "X" will appear in the little circle to the left of the chosen point size. When you return the mouse pointer to the screen, a different sized rectangle will appear, attached to the crosshairs.

After you have selected a font and point size, you may also choose to modify its appearance using the several choices you'll find under the "Style" sub-menu. Move up to the Main Menu bar again; select "Fonts"; then move down to the first choice on that menu, "—> Style." A sub-menu will appear, listing the choices: ITALIC, BOLD, UNDERLINE, OUTLINE, and REVERSE.

Select one or more of these options by continuing to hold down the right mouse button, and, as you move down the list, clicking the left mouse button while each of your choices is highlighted. You'll notice that the little circle to the left of each selection is filled with an "X" after you've performed the above procedure. These choices will remain in effect until you de-select them using the same method.

When using the same font design and point size in 320 x 400 resolution as you saw in 320 x 200, you'll see that the higher resolution mode will reduce the vertical proportions of the letters by half. If you prefer the proportions you saw in the lower resolution just capture your text as a brush; go into the "Brush" menu and select

The Project Menu

"Resize", then on the sub-menu choose "Double Vert," and your letters will be returned to their former shapes.

Several of the familiar features of word-processing are incorporated in the text tool; with the added convenience of positioning your first letter anywhere on the screen. The arrow keys, space bar, and backspace keys all function within the path you established when you placed your first letter.

You can abort writing text by pressing the ESC(ape) key.

BASE COLORS:

The next selection you'll find on the "Project Menu", beneath the choice, "Fast Menu", will be, "—> Base Colors"; as indicated by the left-pointing arrow, this topic has a sub-menu.

In HAM (Hold And Modify) mode, the Amiga uses 16 color registers to hold 16 "Base Colors" which the display circuits of the Amiga can modify to produce the other colors in the picture; hence, "Hold And Modify."

A base color can happen to reside in any of the color boxes in the palette. The easiest way to make certain you are drawing with a base color is to select the "Current" option in the Base Colors sub-menu, causing the current base colors to be displayed in the upper palette row; then draw with those colors. The base colors can be copied to squares in the other palette rows, or a box in another row can be modified to match one of the base colors.

When you draw with a Base Color, Photon Paint does not have to modify any preceding pixels in order to display that color; this usually results in cleaner drawings.

You can select and/or mix a different set of base colors with which to paint, and display them in the upper palette row:

1. Call up the current colors using the "Current" option in the Base Colors sub-menu.
2. Change the color boxes in the upper palette row to the desired colors (see Chapter Four: The Color Palette).

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3. Select "Affect Picture" from the Base Colors sub-menu, which will set the base colors to the new ones you've selected in the upper palette row.

The Amiga has 16 color registers available from which to reference the colors to modify in order to produce all 4096 Hold And Modify colors. Sometimes, a three pixel transition is required before a desired color can be placed onscreen. These transitions, or "artifacts", or "fringes" were not intended by the artist to be part of the picture. To some degree, this is unavoidable in HAM mode. Our goal in producing Photon Paint was to process the user's renderings in such a way as to correct the display and minimize these artifacts.

To achieve the above objective, Photon Paint uses the base colors to improve the corrections of the HAM artifacts. Proper selection of the base colors not only determines your purest painting repertoire, but also which colors the program will have available to achieve optimal corrections of these artifacts, or color transitions.

If you intend to use a wide variety of colors in your painting, we suggest you do not change the current base colors to those you wish to paint with, but leave them to be utilized for their internal function only; i.e., correcting the HAM display of your paintings.

When the program is first loaded (without having loaded a specific picture), the base colors are set to the default setting. This setting will produce the most reasonable results in most cases.

When a stored picture is loaded, the base colors are set from those stored with the picture. Every picture file contains a section in which the base colors used to create that picture are saved.

Unless the corrections done by the program are not considered adequate, you will not have to change the setting of the base colors to optimize the correction process.

The following are some specific guidelines for changing the base colors to best correct what you will be painting with the other non-base, or transitional colors:

1. If you know you will be using a limited number of colors, try sorting them into color families, i.e. blues, reds, greens, etc., and then select a representative color for each of the families to be used as a base color.

The Project Menu

2. Avoid choosing base colors which are too similar. It will be more useful to allocate all 16 positions to different representatives of your various color families.
3. Do not drastically change the base colors of a digitized picture. The digitizer will most likely have allocated the most appropriate colors to the color registers.
4. Do not drastically change the base colors of a picture file imported from another color paint program. Photon Paint does it's best to determine the most appropriate base colors in that case.
5. If a specific rendering produces noticeable artifacts, first "un do" it; then try:
 - a. Changing one of the base colors to the color with which the rendering was done, and,
 - b. Changing another base color to the color of the background area on which the rendering was done (assuming that the background was a solid color; if not, choose the most predominant color of the background area).
6. De-select the "Exact Color" option in the Prefs Menu (there should be no "X" in the little square to the left of the item) whenever it will be acceptable to allow the program to use the closest approximate color to the one chosen from the palette. This will usually produce cleaner drawings by minimizing transitional adjustments.

The following options are located on the Base Colors sub-Menu:

I. FROM BRUSH:

The first selection in the "—> Base Colors" sub-menu will copy the base colors from the current brush (cut from the picture) to the registers.

This is useful when loading a brush which was created with a different set of base colors; or which has been imported from the alternate screen with a different set of base colors.

II. FROM ALTERNATE:

This selection copies the base colors used in the alternate screen (if you have established one).

The Project Menu

This is useful when you intend to cut a brush from one page and move it to the other; eliminating the need to remap either the picture on the alternate page, or the brush after moving it there.

III. RESTORE:

The third selection will restore to the first palette line the original 16 base colors selected by the program when the current picture was first loaded.

IV. DEFAULT:

The fourth selection will restore to the first palette line the 16 base colors always selected by the program initially; prior to any picture being loaded.

V. CURRENT:

Select this option to display the current Base Colors being used by the program; locating them in the first palette row.

VI. AFFECT PICTURE:

Select this option after you have modified the colors in the first palette row, and wish to have the program use them as the Base Colors for the current picture.

This will not only affect the pixels which were drawn with the new Base Colors, but will also affect any dependent pixels, and some of Photon Paint's corrections of the HAM display protocol.

Also select this option after you have designed a set of Base Colors to be used in a new painting; storing them in the registers before you begin.

VII. REMAP PICTURE:

The last selection will remap the currently displayed picture using the 16 colors located in the first palette row as the new Base Colors. The program will try to preserve the original appearance of the picture while doing so.

ALTERNATE:

The next option on the Project Menu is that of using an alternate, or spare screen. There is a sub-menu, as indicated by the left-pointing arrow:

The Project Menu

I. SWAP:

Choosing this option will switch you from the screen you are currently using to a spare screen. It functions just like the first screen, and brushes can be picked up and copied from one screen to the other. Typing "j" from the keyboard will also invoke this command.

II. DELETE THIS PAGE:

Selecting this option will instruct the program to delete the screen (page) which is currently displayed. A requester will appear which reads, "Delete this page?", and you must select either "Yes" or "No" before continuing.

III. DELETE OTHER PAGE:

Selecting this option will instruct the program to delete the screen (page) which is not being displayed at the moment. A requester will appear which reads "OK" to delete alt page?," and you must select "Yes" or "No" before continuing.

ABOUT:

Selection of this menu option will bring up a window containing information about the origin of the program and a list of it's developers. Select "More" to finish reading the information; then "OK" to return to the program.

QUIT:

This selection will quit the program and return you to the Workbench Screen. A requester will appear asking, "Are you sure you want to quit?"; choose "YES" or "NO" in order to continue.

4

The Color Palette

LOCATING THE COLOR PALETTE:

The 64 squares of the color palette are located on the left side of the Fast Menu. The Fast Menu will automatically appear at the top of the screen when the program is first loaded.

THE EXTENDED FAST MENU:

There is an extension of the Fast Menu which can be revealed by clicking the left mouse button while the pointer is over the two little arrows in the upper right hand corner, or pressing the Return key. The Extended Fast Menu will then appear, containing some additional color controls.

SELECTING A SET OF COLORS:

Foreground and Background Colors:

The foreground color is selected by placing the mouse pointer over the preferred color square and clicking the left button. The chosen square will then be surrounded by a white border, and the color will be shown in the large rectangle to the right of the color squares.

The background color is selected by clicking with the right mouse button; it will then be surrounded by a black and white border, and the color will be shown in the large rectangle to the right of the large foreground color rectangle.

The Color Selection Squares:

Notice that each time a new foreground color is selected, the three large Color Selection Squares just below the palette change in appearance. A pair of white dots are located on the horizontal sides of the square, and another pair are on the vertical sides of the square. Picture a line connecting each pair of dots; the pixel at which they intersect should match the foreground color you have just chosen.

The three large Color Selection Squares represent sections of a 3-dimensional cube which contains all 4096 colors.

The Color Palette

The RGB Sliders:

There are three horizontal bands of color just to the right of the three Color Selection Squares; these are the RGB (Red, Green, Blue) Sliders. They, too, will display the foreground color you have just selected; between two white dots on their horizontal sides.

These RGB Sliders represent the 16 incremental values of Red, Green, and Blue present in a chosen foreground color.

The HSV Sliders:

On the lower right corner of the Extended Fast Menu are the three HSV (Hue, Saturation, Value) Sliders. These sliders represent the separate components of Hue, Saturation and Value present in a chosen foreground color.

MIXING COLORS:

You can use these large color selection squares, the RGB Sliders, and the HSV Sliders, to help you mix the colors you want to include in your palette.

If you find a small color palette square containing a color close to the one you want, select it; then go to the color selection squares, and/or the RGB Sliders, to explore the derivatives of the selected color which will be displayed. Position the mouse pointer over an area of one of the Color Selection Squares containing a color closest to the one you want, and click the left mouse button. That color will replace the one in the palette square containing your chosen foreground color. You can then fine tune your color using the RGB Sliders. When you move along one of them, the others remain stationary; you are altering only one Red, Green or Blue value at a time, thus producing the most subtle of changes.

The upper HSV Slider alters the Hue of the selected foreground color. Move the slider, and the color changes from one end of the spectrum to the other. You'll find the same color at either end of the bar, with the rest of the spectrum spread out in between.

The middle slider alters the Saturation of the chosen foreground color, and the bottom slider alters the value. To understand the interrelationship between the

The Color Palette

two, move them both to the far right. Whatever Hue is selected is now fully saturated (pure), and contains no trace of white or black. Moving the Saturation slider to the left reduces the purity (saturation) of the color by adding white. Moving the Value slider to the left darkens the value of the color by adding black.

CREATING A SPREAD OF COLORS:

It is possible to compute an exact spread between any two selected colors on the palette using either the RGB or the HSV protocol.

The RGB Spread Gadget:

Select the color with which you want to begin the spread; move the mouse pointer into the vertical rectangle which contains the letters "RGB"; click the left mouse button; then select the target color. The program will then incrementally change the Red, Green and Blue components of the first color until the target color is achieved; using the number of steps allowed by the number of palette squares in between.

The HSV Spread Gadget:

Select the color with which you want to begin the spread; move the mouse pointer into the vertical rectangle which contains the letters "HSV"; click the left mouse button; then select the target color. The program will then incrementally change the Hue, Saturation and Value components of the first color until the target color is achieved; using the number of steps allowed by the number of palette squares in between.

THE COPY GADGET:

A color can be copied from one position on the palette to another using the Copy Gadget. First, select the color you wish to copy as your foreground color; then move the mouse pointer into the horizontal rectangle which contains the word, "Copy", and click the left mouse button; then move the mouse pointer to the color square into which you want the first color copied, and click the left mouse button.

The Color Palette

THE SWAP GADGET:

You can cause two colors to trade places on the palette by using the Swap Gadget. Select the first color, then move the mouse pointer into the horizontal rectangle which contains the word, "Swap"; then select the color you want to have switched with the first color, and their positions will be reversed.

5

The Preferences Menu

On the Main Menu bar at the top of the screen, to the right of the "Project" Menu is the abbreviation "Prefs"; this refers to the Preferences Menu. This menu allows you to decide among a number of convenience features.

SCREEN MODE:

The selection, "Screen Mode..." includes the three dots which indicate that a window will appear; allowing you to make some additional decisions and/or enter some data.

The window will contain the following gadgets:

I. NTSC:

When your Amiga is operating on the NTSC standard, the program will display this gadget clearly; "ghosting" and disabling the Pal gadget.

II. PAL:

When your Amiga is operating on the PAL standard, the program will display this gadget clearly; "ghosting" and disabling the NTSC gadget.

III. INTERLACE:

Clicking the left mouse button while inside the Interlace gadget will change the screen display mode to HAM Interlace: 320 X 400.

The change in width and height will be reflected in the Width and Height readout on the lower half of the window. To return to non-interlace, 320 X 200, just click on the gadget again.

IV. OVERSCAN:

Clicking the left mouse button while inside the Overscan gadget will change the screen display mode to overscan (filling the entire monitor screen: no visible borders): 325 X 240.

The change in width and height will be reflected in the Width and Height readout on the lower half of the window. To return to non-interlace, 320 X 200, just click on the gadget again.

The Preferences Menu

When you have completed your operations in this window select "OK" to return to the normal screen.

Should you change your mind about altering any of the settings in this window, return to the normal screen by selecting "CANCEL".

EXACT COLOR:

This is the second choice on the "Prefs" menu; when this option has been selected, an "X" will appear in the small circle to the left of the words, "Exact Color"; if you de-select this item, the "X" will disappear. With this option selected, Photon Paint will put pixels of exactly the chosen color on the screen.

This function is significant, because HAM mode usually translates the selected color based upon the color of adjacent pixels. With Exact Color selected, the program will paint with the selected color, and adjust the colors of adjacent pixels instead.

KEEP UNDO:

Selecting this option will prevent the "un do" function from becoming disabled in circumstances where a memory intensive function is requested by a user who's computer does not have sufficient memory available to complete the operation without using the undo buffer.

If available memory is low, and this option has been selected, the "un do" gadget will appear as if it has been selected: light letters on a dark background.

KEEP BRUSH:

Selecting this option will prevent the "Restore Previous Brush" function from becoming disabled in circumstances where a memory intensive function is requested by a user who's computer does not have sufficient memory available to complete the operation without using the previous brush buffer.

The Preferences Menu

LOAD PROMPT:

When this option is selected, you will be prompted whenever you attempt to load a picture which has a resolution different from the current screen.

The prompt window will ask you if you wish to change the screen resolution to that of the picture you have selected to load; it will specify that resolution, and you must select either "YES" or "NO" to return to the screen or load the requested picture.

If you would rather not be prompted in such situations do not select this option; the program will automatically switch resolutions when loading pictures of a resolution different from the current screen.

COORDINATES:

Selecting Coordinates will cause a set of numbers to appear on the right side of the "drag bar" at the top of the Fast Menu. These numbers represent the exact position of your mouse crosshairs on the screen, according to the number of pixels from the left side of the screen and from the top of the screen, respectively.

WORKBENCH:

To reveal the Workbench screen which is normally behind the painting screen, you must move your mouse pointer to the word "SCREEN" in the upper left corner of the Fast Menu (inside the drag bar), and, holding down the left mouse button, pull down the painting screen; the Workbench screen will appear behind it.

The Fast Menu will not disappear completely; the drag bar of the painting screen will remain at the bottom of the Workbench screen so you cannot accidentally be stuck in Workbench.

When you have completed your workbench operations, use the left mouse button inside the word "SCREEN" to pull the painting screen back up, and in front of the Workbench screen.

You may want to select "Workbench"; "Close" to free up additional memory for

The Preferences Menu

memory intensive functions. Only after selecting "Close" will you have to select "Open" in order to reveal the Workbench screen behind the painting screen. Otherwise, it will always be there when you pull down the painting screen.

FOLLOW MOUSE:

This device allows you to force the program to create a line which exactly traces the path of the mouse, even if the mouse is moved so rapidly that the drawing function must catch up later.

When this function is de-selected, the drawing function will attempt to keep up with the most rapid movements of the mouse by cutting off corners and/or curves.

MOUSE SPEED:

When you highlight the option, "Mouse Speed", a sub-menu with three choices will appear: FAST, MEDIUM, and SLOW. The choice which is currently in effect will show an "X" in the little circle to the left of the word. Experiment with the three speeds to learn the relative feel of each. The slow speed can be useful for very tight work, and the fast speed for using the mouse to perform the more utilitarian functions.

SCREEN OFFSET:

This option allows you to customize the position of your screen display.

Once you've selected this item, a window will appear containing a black square which has a small gray square inside. Position your mouse pointer over the small gray square, hold down the left mouse button, and move the small square around inside the large black square; notice that the screen display relocates according to your movement of the small square.

When you are satisfied with the position of the screen display, release the left mouse button, and click the left button while your pointer is within the "OK" gadget. If you decide not to save your changes in the screen offset, select "CANCEL".

The Preferences Menu

SAVE PREFS:

This option allows you to save your selections on the Preferences Menu.

Select this item after you have selected and set your personal preferences on the menu; the data will be saved on the program (SYS:) disk in the S: directory under the filename "PP:" Preferences. The next time the program is loaded, it will look in this file for the preferences settings, and boot up with them all in effect.



6

The Brush Menu

The third word which appears in the Main Menu bar when you've placed your mouse pointer at the very top of the screen, and held down the right mouse button, is "Brush". The "brush" referred to here is a custom "pic-brush" which you've picked up from a portion of the screen using the Scissors Tool, as described in chapter three.

The first two choices on the Brush menu allow you to recall a previously stored brush from disk, or to store a newly selected brush:

LOAD:

Move down the Brush Menu to the word, "Load..." and release the right mouse button. A window will appear which is just like the "Load" window on the Project menu, except that the title at the top of this window will read, "Load Brush."

The program will look for a drawer (dir) named "brushes" by default. You also have the option of creating and naming your own custom drawers. The disk will be examined for directories (dir), and they will be listed in the large gray requester.

Select the drawer in which you've saved a brush by clicking the left mouse button when your pointer is over the name of that (dir); the names of all brushes stored in that drawer will appear in the large gray requester, and the name of the (dir) will appear in the black bar labeled, "Drawer." Now load your brush by placing the mouse pointer over it's name, and clicking the left button; the name will appear in the black bar labeled "File," and when you click the left mouse button in the gadget which reads, "Load," the window will disappear, and the brush will soon appear on the screen.

If you have chosen not to create a special drawer (dir) for brushes, or not created any directories at all, the requester will just display the filenames of any brushes and pictures on the disk, and the name of the disk drive being accessed will be the only data displayed in the "Drawer" bar. In this case, it would be helpful to create an appendix to the filenames which will let you know whether a filename refers to a brush or a picture. I've used the appendix, ".pic" for pictures, or ".bsh" to indicate a brush. Just select the appropriate filename and click on the "Load" gadget as described above.

The Brush Menu

When the brush appears, it will be attached to the mouse pointer as if you had just picked it up from another screen. This is convenient because you don't have to worry about where the brush will appear on the painting; therefore, you can have a painting on screen prior to loading a new brush, and position it wherever you wish after it is loaded.

SAVE AS:

Once you have used the Scissors Tool and selected a portion of your painting as a "brush," you can save it to disk for future use. Do not place the brush down on the screen; leave it attached to the mouse pointer. Now move the mouse pointer to the very top of the screen and hold down the right mouse button; the Main Menu bar will appear. Move over to "Brush"; then down to "Save as..." and release the right mouse button. The window which will appear is just like the "Save as..." window on the Project menu, except that the title at the top of this window will read, "Save Brush."

If you have created a drawer (dir) in which to save your brushes, select it's title. It will appear in the black bar labeled, "Drawer"; then enter the name you've chosen for your brush in the black bar labeled, "File." As soon as you begin typing, the letters will automatically appear in this File bar.

If you have not created a drawer for brushes, just type in your chosen filename; it will appear in the File bar. The backspace and delete keys control the cursor within the bar, in case you need to correct your entry. Now click the left mouse button in the "Load" gadget and your custom "pic-brush" will be saved to disk.

The other choices appearing on the Brush Menu are a variety of special graphic manipulations which can be performed on the selected "brush":

TRANS:

This option allows you to specify that the background color of your custom brush will be transparent when you click it down on the screen. Otherwise, the background color will overlay whatever painted area is beneath the rectangular dimensions of the brush frame.

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To select this item, hold down the right mouse button and move your mouse pointer down the Brush Menu until the word "Trans" is highlighted; then release the button. You can also select by clicking the left mouse button while you're holding down the right mouse button and the word "Trans" is highlighted. An "X" will appear in the small circle to the left of the word, and the item will remain selected until de-selected using the same procedure.

This function can be performed from the keyboard by holding down either of the "ALT" keys, and typing "R."

FLIP:

Your next option will be to flip your custom brush, either horizontally ("Horiz") or vertically ("Vert"). Hold down the right mouse button, and move the pointer down the Brush Menu to the word, "—> Flip," and the sub-menu will appear, showing your two choices, "Horiz" and "Vert."

If you select "Horiz" by releasing the mouse button, the brush will be flipped horizontally, (the left and right sides will be reversed), and if you select "Vert," the brush will be flipped vertically (reversed top and bottom). Type "X" to flip the brush horizontally, or "Y" to flip the brush vertically from the keyboard.

RESIZE:

This menu selection provides several means of changing the size of your custom brush. Hold down the right mouse button and move the pointer down the Brush menu to the word, "—> Resize", and the sub-menu will appear, containing the following options. Choose the option you prefer by releasing the right mouse button while your pointer is over the particular word, and it is highlighted.

- I. FREE: (ALT plus "s," or just "z" from keyboard)

When this option is selected, your brush will reappear on the screen with the word "size" attached to the lower right-hand corner. Hold down the left mouse button, and a hollow white rectangle the original size of the brush will appear; as you move the mouse, the size of the hollow rectangle will change. When the rectangle seems to be in the proportion desired, release the mouse button; the

The Brush Menu

program will take a moment to compute the appearance of the new brush.

II. DOUBLE: (ALT plus "d", or just "H" from keyboard)

This option will exactly double the size of your brush.

III. DOUBLE HORIZ:

This option will double the brush in the horizontal direction only.

IV. DOUBLE VERT:

This option will double the brush in the vertical direction only.

V. HALVE: (ALT plus "h," or just "h" from the keyboard)

This option will reduce the size of the brush by exactly half.

VI. HALVE HORIZ:

This option will reduce only the horizontal dimensions of the brush by half.

VII. HALVE VERT:

This option will reduce only the vertical dimensions of the brush by half.

TWIST:

This option will allow you to twist the brush image, creating a 3-D spiral.

Hold down the right mouse button and position the mouse pointer over the word "Twist" on the Brush Menu; when it is highlighted, release the button.

When you move the pointer back to the screen, your brush will appear with the crosshairs attached to the right side of the rectangle; the abbreviation, "TWIST" will appear below the crosshairs. Hold down the left mouse button (the image will become a hollow white outline) and move the mouse either to the left or to the right (up and/or down will have no effect). The farther left or right you move the mouse, the more twisted the outline will become. When you are satisfied with the outline, release the left mouse button; the image will take a few moments to compute, and your twisted brush will then appear.

You can invoke this function from the keyboard by holding down the "ALT" key and typing "w."

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ROTATE:

This option will allow you to rotate the brush image to varying degrees. Hold down the right mouse button and move down the Brush Menu to “—> Rotate”; then examine the sub-menu which will appear. Choose an item from the sub-menu by releasing the mouse button while the item is highlighted.

I. FREE:

Selecting this item will allow you to rotate the brush freely, using the lower left corner as the pivot point.

Move the mouse pointer back into the drawing area, and the brush will reappear with the crosshairs attached to the lower right corner, and the abbreviation “ROT” listed below. Hold down the left mouse button; the brush will become a hollow white rectangle. Now move the mouse in a circular path. The rectangle will follow the movement of the mouse, pivoting on the lower left corner of the rectangle. You can rotate the image an entire 360 degrees. Once satisfied with the position of the rectangle, release the mouse button; the brush will be redrawn in a few moments.

This function can be called up from the keyboard by holding down the “ALT” key and typing “Z.”

II. +90: (ALT plus “0,” or just “Z” from keyboard)

When this item is selected, the program will take a few moments; then display the brush rotated 90 degrees clockwise.

III. -90: (ALT plus “9” from keyboard)

When this item is selected, the program will take a few moments; then display the brush rotated 90 degrees counter-clockwise.

IV. 180:

When this item is selected, the program will take a few moments; then display the brush rotated 180 degrees: upside-down.

WRAP ON:

This option enables you to wrap your custom brush around a variety of 3-D objects. Hold down your right mouse button and move down the Brush Menu to the words “—> Wrap On”. There will be a sub-menu with several options available. Select one by releasing the mouse button while your selection is highlighted.

I. TUBE:

This option will allow you to wrap your brush around a vertical tubular shape which is the same height as the brush. The brush will reappear on screen with the crosshairs attached to the upper right-hand corner; the word “TUBE” will appear beneath them.

Hold down the left mouse button, and the brush will become a hollow white rectangle. Move the mouse to the left in order to set the width of the tube. It cannot be any wider than the original brush, so moving the mouse to the right will not change the dimensions of the rectangle. When you are satisfied with the shape of the tube, release the mouse button. A few moments later the new, tubular brush will appear.

This function can be invoked from the keyboard by holding down the “ALT” key and typing “U.”

II. CONE:

This option will allow you to wrap your brush around a vertical conical shape which is the same height as the brush. The brush will reappear on screen with the crosshairs attached to the lower right-hand corner; the word “CONE” will appear beneath them. Hold down the left mouse button, and a hollow white cone will appear; the base of the cone will be the same width as the base of the brush. Move the mouse to the left to adjust the width of the base. Moving the mouse to the right will have no effect, as the base of the cone can be no wider than the base of the brush. When satisfied with the width of the cone, release the mouse button, and after a few moments the cone shaped brush will appear.

The Brush Menu

Hold down the "ALT" key and type "C" to select this option from the keyboard.

III. BALL:

This option will enable you to wrap your brush around a sphere. The brush will reappear on screen with the crosshairs in the center of the brush; the word "BALL" will extend beneath them.

Hold down the left mouse button and move the crosshairs away from the center of the brush; a hollow white circle will appear, and widen as you move the mouse outward. The circle will automatically stop when you reach any edge of the brush. When you're happy with the size of the circle, release the mouse button, and after a few moments your spherical brush will appear.

Hold down the "ALT" key and type "B" to select this option from the keyboard.

IV. ELLIPSE:

This option will enable you to wrap your brush around an ellipse. The brush will reappear on screen with the crosshairs in the center of the brush; the abbreviation "ELPS" will extend beneath them.

Hold down the left mouse button and move the crosshairs away from the center of the brush; a hollow white oval will appear, and widen as you move the mouse outward. The ellipse will automatically stop when you reach any edge of the brush. Because an ellipse is more variable, you can reach the edges of your brush in one direction, and still adjust the dimensions of the ellipse in the other direction. When you're happy with the shape of the oval, release the mouse button, and after a few moments your elliptical brush will appear.

Hold down the "ALT" key and type "E" to select this option from the keyboard.

V. FREE:

This option will enable you to wrap your brush around a symmetrical, free-hand drawn shape. The brush will reappear on screen with the crosshairs positioned in the right half of the image; the word "FREE" will appear beneath them. Hold down the left mouse button, and a hollow rectangle will appear which represents the right half of the rectangular shape of the brush. The crosshairs will be located in the center. WITHOUT holding down either mouse button, move

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the mouse around inside the rectangle until the crosshairs are positioned where you wish to begin drawing your free-hand shape. Since the rectangle represents the right half of the brush, you will be drawing the right-hand side of a symmetrical shape. When you want to begin drawing, hold down the left mouse button. You can modify the profile of your free-hand shape indefinitely. Whenever you draw over a section which already contains a line, the old line will be replaced as the new line is added; just as when drawing ordinarily, no line will be created unless you are pressing the left mouse button. When you are pleased with your free-hand shape, touch the space bar, and after a few moments the newly shaped brush will appear.

Hold down the "ALT" key and type "F" to select this option from the keyboard.

VI. CUBE 3/4:

This option will enable you to wrap your brush around a 3-D cube. The brush will reappear on screen with the crosshairs in the center of the brush; the word "CUBE" will extend beneath them.

Hold down the left mouse button; a hollow cube will appear. As you move the mouse around, the cube will change perspective. When you're pleased with the appearance of the cube, release the mouse button, and after a few moments your brush will reappear; wrapped around the visible sides of the cube.

Hold down the "ALT" key and type "4" to select this option from the keyboard.

VII. CUBE * 3:

This option will enable you to duplicate your whole brush on each of the three visible sides of a 3-D cube. The brush will reappear on screen with the crosshairs in the center of the brush; the word "CUBE" will extend beneath them.

Hold down the left mouse button; a hollow cube will appear; large enough for the brush to fit on each side. As you move the mouse around, the cube will change perspective. When you're pleased with the appearance of the cube, release the mouse button, and after a few moments your brush will reappear; reproduced on each of the visible sides of the cube.

Hold down the "ALT" key and type "3" to select this option from the keyboard.

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BEND:

Using this option, you can bend your brush in several directions. Select this item by holding down the right mouse button and moving down the Brush Menu until the word "Bend" is highlighted; then release the button.

The brush will reappear with the crosshairs on the upper right, and the word "Bend" will extend beneath them. Hold down the left mouse button; a hollow rectangle having the same interior dimensions as your brush will appear.

When you move the crosshairs straight down, the middle of the rectangle will bend downward; move the crosshairs straight up, and the middle of the rectangle will bend upward. Moving slightly left or right will offset the bend of the curve in that direction; moving past the left or right margins of the rectangle will bend the brush asymmetrically to that side. When you are satisfied with the shape of the rectangle, release the mouse button to start the calculation.

All aspects of the rectangle must remain onscreen; if any portion of the rectangle is moved offscreen, or it's shape is altered so that any portion is offscreen, the brush cannot be recalculated, and will reappear in it's original form when you release the mouse button.

TILT:

This option allows you to place your brush on a 2-D plane which is positioned in 3-D perspective on the screen. Select this item by holding down the right mouse button and moving down the Brush Menu until the word "Tilt" is highlighted; then release the button.

The brush will reappear on screen with the crosshairs in the center of the brush; the word "Tilt" will extend beneath them; click the left mouse button; a hollow rectangle will appear, and on the drag bar of the Fast Menu you will see three zeros "0" "0" "0."

From left to right, these zeros represent pitch, roll and yaw, respectively. Two of these adjustments can be used onscreen simultaneously; the two presently selected appear on the drag bar to the right of the three zeros. A fourth type of adjustment is distance, which does not have a "0" position.

The Brush Menu

I. PITCH:

When you drag the crosshairs up or down, you are changing the pitch of the brush; that is, tilting it up or down.

II. ROLL:

When you drag the crosshairs left or right, you are rolling the brush in either direction; pivoting around a vertical center line.

III. YAW:

When you drag the crosshairs left or right, the brush rotates around it's own center, on the imaginary plane where it is located.

IV. DISTANCE:

When you drag the crosshairs up, the brush moves toward (closer to) the viewer; when you drag them down, the brush moves away (farther) from the viewer. You can repeatedly drag the crosshairs from the top of the screen to the bottom, and move the brush farther and farther away; or repeatedly drag the crosshairs from the bottom of the screen to the top, and move the brush closer and closer. Once the brush becomes so close that a portion of it is no longer onscreen, the outline will disappear, and you must reverse the process to get it back onscreen.

The numeric keypad on the right side of your keyboard is used to select and/or fix these functions. When you begin your operations, pitch and roll are automatically selected. To lock the pitch in the current position, press the number "7"; to lock roll, press the number "8"; to unlock either one, press the same number again (they are toggles). To adjust distance and/or yaw, press the number "6," and "Dist" and "yaw" will replace "Pitch" and "Roll" on the drag bar. Use "7" to lock distance, and "8" to lock yaw.

If you want to adjust pitch and/or roll again, press the number "9." When you have locked a function, the word will appear in white letters on a black rectangle.

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V. SHIFT:

Shift allows you to move the brush around in a 3-D environment, linked to a perspective vanishing point. Select this function by pressing the number "3" on the numeric keypad; "Ypos" and "Xpos" will now appear on the drag bar. The first two "0" positions will show the positive or negative settings of the "Y" and "X" axes, respectively; these readouts remain the same as you hold down the left mouse button and drag the pointer around the screen; moving the brush. This is because you are changing your point of view of the brush in it's 3-D environment, not the degrees of rotation on the brush.

You can lock the "Y" axis by pressing the number "7," and the "X" axis by pressing the number "8." They are toggles; to unlock them again, just press the same number another time.

Hold down the left mouse button; when you move the mouse, the hollow rectangle will change perspective with the movement of the crosshairs. You can release the mouse button and reposition the crosshairs; then hold down the left button again and further alter the perspective of the rectangle.

Once you are satisfied with the appearance of the outline, release the mouse button, and touch the space bar on your keyboard. The program will need a few moments to compute the new angle of the brush; then it will reappear in the chosen perspective.

Hold down the "ALT" key and type "T" to select this option from the keyboard.

LUM(inosity):

This option allows you to specify the direction of a light source which will govern the shading of the 3-D surface your brush will be mapped upon.

Select this item by holding down the right mouse button and moving down the Brush Menu to the syllable "Lum"; the requester which appears will bear the title, "luminosity," and will afford you the following adjustments:

I. LUM ON:

The default setting of this gadget is "ON"; the gadget is highlighted with

The Brush Menu

the words appearing black on a white background. This gadget is automatically selected upon activation of any of the setting gadgets in the Luminosity requester.

II. INTENSITY:

You'll find the light source intensity slider on the left side of the requester; it allows you to adjust the intensity, or brightness of the light source on a scale from "1" to "15."

The default setting is "1." You'll see the numeral to the left of the black slider bar. Place your mouse pointer inside the small gray square in the left side of the slider bar, hold down the left mouse button, and move the pointer along the bar to the right. The numeral "1" on the left will change as you proceed to the right until it reaches the maximum of "15." If you position the mouse pointer within the bar to either side of the gray square and click the left mouse button, the square will move one increment in that direction.

III. FULL SCALE:

This toggle gadget enables you to choose whether or not the shading function will attempt to use the full spectrum of brightness variations across the 3-D object.

The default setting is "on" because for the most part results are best this way. There are some cases where interesting effects are produced with this function "off." For example, positioning the light source behind the object; not allowing a full range of shading will produce a slight glow around the outer edges of the shape.

When this toggle is "on" the words "Full scale" are on a white background; when it is "off" the words are on a black background.

IV. DIRECTION:

The black square on the right side of the window is labeled "direction." You'll see a small gray square in the center; a "0" next to the left side and another "0" underneath. This tool enables you to set the direction of the light source.

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Imagine an horizontal line bisecting the large square. This line represents a 180 degree half-circle which has been straightened into a line. The 3-D object for which you will be specifying the direction of a light source is in the center of this half-circle.

Likewise, imagine a vertical line bisecting the large dark square; representing a 180 degree half-circle straightened into a line.

The default location of the small gray square indicating the position of the light source is in the center; directly in front of the object. As you move the small gray square to the left of center, the "0" underneath the large square will update from "0" to "-90" (negative numbers), and if you move to the right of center, the counter will update from "0" to "90" (positive numbers).

Likewise, when the small gray square is moved above center, the counter to the left of the large square will update to negative 90 degrees, and when the small square is moved below center the counter will update to positive 90 degrees.

V. BACKLIGHT:

When this toggle gadget is selected, the light source will be located behind the object. As you move the small gray square to the left of center, the "0" underneath the large square will update from "0" to "-90" (negative numbers), and if you move to the right of center, the counter will update from "0" to "90" (positive numbers).

Likewise, when the small gray square is moved above center, the counter to the left of the large square will update to negative 90 degrees, and when the small square is moved below center the counter will update to positive 90 degrees.

To relocate the light direction in front of the object, toggle the backlight gadget so that it is deselected (light letters on a black background).

When you have set your various options in the Luminosity window, click your left mouse button while the pointer is in the "OK" gadget in the lower left corner. If you choose not to save the new settings, select "Cancel" in the lower right.

The Brush Menu

REMAP:

This option restores the original colors of your brush after it has been loaded from disk, or imported to a spare screen which has a different palette from that of the brush.

Before placing the imported brush on the screen, hold down the right mouse button and move down the Brush Menu until "Remap" is highlighted; then release the mouse button. The top bar of the Fast Menu will display the number of the current scanline being remapped, and the number remaining to be remapped. After the process is complete, the brush will reappear on the screen composed of it's original colors.

FREE:

This option will clear the memory buffer of the previously selected custom "pic-brush"; a brush, if attached to the crosshairs, will disappear as soon as this item is selected.

If a previously selected custom brush was being kept in memory, available for recall, it will be cleared and the memory will become available for other operations. Depending upon the size of the brush in question, quite a lot of memory can be freed this way.

Hold down the right mouse button and move down the Brush Menu until the word "Free" is highlighted; then release the button.

7

The Fonts Menu

The fourth choice on the Main Menu bar will be the Fonts Menu, which affords you a selection of standard Amiga fonts and styling options. To use the fonts onscreen, you need to select the Text Tool from the fast menu. Place the mouse pointer inside the little light gray square in the bottom row of tool gadgets which has an "A" in it; then click the left mouse button.

The program boots up with the first standard Amiga font (Topaz 8) selected. To choose from the full range of available fonts, move your mouse pointer to the Main Menu bar at the top of the screen, and hold down the right mouse button to expose the Main Menu titles; move the pointer over to the title, "Fonts"; it will be highlighted in lavender, and the following options will be listed below:

STYLE:

After you have selected a font and point size, you may also choose to modify its appearance using the several choices you'll find under the "Style" sub-menu. The choices will be: ITALIC, BOLD, UNDERLINE, OUTLINE, and REVERSE.

Select one or more of these options by continuing to hold down the right mouse button, and, as you move down the list, clicking the left mouse button while each of your choices is highlighted. You'll notice that the little circle to the left of each selection is filled with an "X" after you've performed the above procedure. These choices will remain in effect until you de-select them using the same method.

LIST FONTS:

The second item on the list will be "List Fonts." Hold down the right mouse button and move down the list until these words are highlighted in lavender. Release the right mouse button; wait a moment; then go back to the Main Menu bar and use the right mouse button again to highlight the "Fonts" menu. You will see the names of all the other available fonts listed beneath the original subjects on the menu.

To select one of the other fonts on the list, follow the usual procedure and use the right mouse button to highlight the name of the desired font; then, still holding

The Fonts Menu

down the right button, move over to the choice of font point sizes on the sub-menu which appears, and click the left mouse button while your choice is highlighted. An "X" will appear in the little circle to the left of the chosen point size. When you return the mouse pointer to the screen, a different sized rectangle will appear, attached to the crosshairs.

When using the same font design and point size in 320 x 400 resolution as you saw in 320 x 200, you'll see that the higher resolution mode will reduce the vertical proportions of the letters by half. If you prefer the proportions you saw in the lower resolution just capture your text as a brush; go into the "Brush" menu and select "Resize," then on the sub-menu choose "Double Vert," and your letters will be returned to their former shapes.

Several of the familiar features of word-processing are incorporated in the text tool; with the added convenience of positioning your first letter anywhere on the screen. The arrow keys, space bar, and backspace keys all function within the path you established when you placed your first letter.

CHANGE DISK:

The third choice on the Fonts Menu will be "Change Disk..." If you have another data disk which contains additional fonts, selecting this option will bring up a requester to enable you to enter a new pathname in order to access them.

Hold down the right mouse button and move down the Fonts Menu until the words "Change disk" are highlighted; then release the button. A small window will appear, and in the title bar will be the request, "Enter new fonts path:." Just below will be a black bar with the light colored cursor in the far left side; the existing pathname describing the location of the built in choice of fonts (SYS: Fonts) will appear in the bar. Use the "DEL" key to remove this default pathname, and type in the pathname necessary to access the fonts from your data disk. If your data disk will be located in the external drive, you need to enter "dfl:" ahead of the names of your directory and filename.

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The Mode Menu

Your fifth choice, on the far right of the Main Menu bar, will be your drawing "Mode." Move the mouse pointer to the very top of the screen and hold down the right mouse button; then move to the right until you see the word "Mode" highlighted in lavender. The Mode Menu will then open up underneath, listing the following options:

NORMAL:

When the drawing mode selected is "Normal," all regular drawing functions of the program are unmodified.

BLEND:

When the drawing mode selected is "Blend," the program will combine a "brush" with whatever happens to be underneath it when you click the left mouse button and set it onto the screen. This applies to both standard brushes and custom brushes, as well as any filled rectangle, circle, ellipse, free-hand fill or text.

The relative degree to which the background shows through the brush, or the brush dominates the background, can be determined by using the "Set" window:

Set:

Just beneath the word "Blend" on the Mode Menu you'll find the word "Set...." Still holding down the right mouse button, move down the menu until "Set" is highlighted; then release the mouse button. A window will appear, with the words "Blending Ratio" in the title bar.

The black HORIZONTAL rectangle represents the blending ratio between the background and the brush, from left to right. The rectangle to it's left contains a series of gradations from white to black. This gray scale gadget represents the stages of blending available if a solid white brush is placed over a solid black background.

The black VERTICAL rectangle represents the blending ratio between the background and the brush, from bottom to top. The rectangle above it contains a series of gradations from white to black. This gray scale gadget also represents the stages of blending available if a solid white brush is placed over a solid black background.

The Mode Menu

The default positions are half-way; producing an image which is 50% background (the portion of the painting behind the brush) and 50% brush.

There are three methods available for changing the default settings:

1. Using the Bi-directional Control: the medium-sized gray square between the Horizontal and Vertical rectangles is also the Bi-directional Control.

Position the mouse pointer within the square, and click the left mouse button; the Vertical and Horizontal graphs will change to represent a ratio of brush to background in which the brush obscures the background 100% at the point in the square where you've clicked the mouse button; graduating to a 0% ratio at the edges. The middle square will also update to show the visual effect of the setting.

The place where you've clicked the mouse button represents a position on the brush where the brush is 100% dominant over the background; from there, the brush gradually decreases in ratio to the background until it reaches the edges, where the ratio is 0%.

To relocate the center of this gradation of 100% to 0%, place the mouse pointer in the new location within the large square, and click the left button; you'll notice that the Horizontal and Vertical graphs again update their displays to represent the changed center position of the Bi-Directional Control.

2. Drawing a free-hand representation of the ratio inside the Horizontal and/or Vertical rectangle.

Position the mouse pointer inside the rectangle whose setting you wish to change, hold down the left mouse button, and draw a new free-hand line or curve to replace the original straight line. You can alter this line wherever you wish just by holding down the left button and drawing again; the line will change accordingly.

If you'd prefer a straight-line transition between sections of the graph, hold down the right mouse button while drawing (instead of the left); a straight line will be drawn between your starting point and your ending point as soon as you release the button. You can insert a new segment anywhere along the graph line.

The Mode Menu

3. Using the gray scale gadgets. To select one of these settings, locate your mouse pointer over one of the stages of gray inside the rectangular gadget and click the left button.

The white line within the black rectangle will adjust it's position to visually represent the ratio of blending you have selected, and the large square in the center of the display will change it's appearance to symbolize the outcome of the newly selected blending ratio.

I. SWAP AND COPY GADGETS:

Inbetween the two graphs is an arrow pointing in both directions; this is the Swap Gadget. Click the left mouse button inside this symbol to switch the settings of the graphs.

Beneath the Vertical graph, and to the right of the Horizontal graph, are arrows pointing toward each graph, respectively. Click the left mouse button inside these symbols to copy the setting of one graph into the other.

II. IGNORE GADGETS:

Beneath each graph is a rectangle containing the word "Ignore"; when this gadget is selected using the left mouse button, it will be highlighted.

Each one causes one of the graphs to be ignored, so it will not be considered in the calculation. This fact will be demonstrated in the sample blending of the center square, and the white graph line will become gray in the "ignored" graph.

III. DITHER:

The Dither Control is a horizontal black bar at the top of the window; having the numeral "0" on the left. A small gray square appears in the left end of the bar. This is the default setting.

If you place the mouse pointer over the gray square and hold down the left button, you can slide the square along the bar, which will change the numeral from "0" to "15." These numbers represent the degree of dithering which will be used to graduate the colors of the brush from 100% to 0%.

The Mode Menu

After you've reset the dither control, the Bi-Directional control square will change to show the effect of the dithering on the existing settings.

IV. AVERAGE AND MINIMUM:

Left of the two graphs are two gadgets, "AVG" and "MIN." When the Average gadget is selected, an average is taken from the settings of the related points from each graph, and the brush to background ratio is set at this average. When Minimum is selected, the point having the lower value will be used.

Using the Bi-directional Control, with the Minimum gadget selected, will have the effect of smoothly blending the edges of the brush with the background.

When you have completed your setting process, click the left mouse button inside the "OK" gadget to return to the painting screen; if you decide not to use the new settings, click "Cancel," and the previous settings will be used.

ADD:

This option adds the current color(s) of the brush to the background color(s).

Continue down the mode menu while holding down the right mouse button until the word "Add" is highlighted; then release the button. The word "Add" will appear in the drag bar of the Fast Menu.

SUBTRACT:

This option subtracts the current color(s) of the brush from the background color(s).

Continue down the mode menu while holding down the right mouse button until the word "Subtract" is highlighted; then release the button. The word "Subtract" will appear in the drag bar of the Fast Menu.

The name of any drawing mode other than "Normal" will appear inside the drag bar when it has been selected. To de-select any drawing mode, simply select one of the alternatives. The currently selected mode will also show an "X" in the small circle to its left in the Mode Menu.

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The following tutorials are designed to demonstrate some creative methods of combining the various features of Photon Paint. They are designed to be explicit enough for a relative beginner to follow without having had to read the entire manual beforehand.

BLENDING A BRUSH:

Using the Blend function to place a custom "pic-brush" into a pre-existing painting.

In this example we will practice:

- Loading a picture from disk;
- loading a brush from disk;
- using the alternate (spare) screen;
- setting the blending ratio for the brush;
- placing the brush into a pre-existing painting.

1. First, load the picture entitled "Floor.HAM.pic" from the program disk in df0:.

Move your mouse pointer to the very top of the screen and hold down the right (as opposed to left) mouse button; the Main Menu will appear. At the far left you'll see the word "Project"; move the pointer over this word, and it will be highlighted in lavender. The Project Menu will appear underneath; now move your pointer down to the first word on the menu, "Load..." When this word is highlighted, release the right mouse button, and a window will appear which reads "Load Picture" at the top.

Right under this phrase is a black bar labeled "Drawer"; a "drawer" is the name of a directory in which paintings ("pictures"), have been saved. The name of such a directory must be entered into this black bar prior to attempting to load a picture from the program disk.

The program will automatically search the program disk, which is in df0:, and list it's directories, the names of which will all appear in the large, dark gray requester in the center of the window.

The sample pictures which have been included with the program are on the second disk, labeled "Photon Art Disk." Place this disk in your second disk drive (df1:), and move your mouse pointer into the gadget under the Drawer bar

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which reads "df1: "; then click the left mouse button. The program will read the disk in df1: and list its directories in the large gray requester.

Move your mouse pointer over the (dir) Pictures, and click the left mouse button. The name of the "Pictures" (dir) will appear in the black bar labeled "Drawer," preceded by the name of the disk drive on which it is located (df0:).

The titles of all pictures stored in the Pictures directory will appear in the large, dark gray requester. Select the one entitled "Floor.HAM.pic" by placing your mouse pointer over its title, and clicking the left button. Notice that the name of the selected title now appears in the black bar labeled "File" near the bottom of the window. Now, click the left mouse button while the pointer is in the gadget which reads, "load"; the window will disappear, and the selected picture file will begin to fill the screen. It will appear normal after the second stage of the display process is complete.

2. Switch to the spare (alternate) screen by pressing "J" on the keyboard, or by moving the pointer up to the top of the screen, holding down the right mouse button to reveal the Main Menu, finding the word "Project" on the left side, moving down the Project Menu to "Alternate," moving to the sub-menu which will appear, and releasing the right button while highlighting the word "Swap." We'll use the alternate screen to call up a diaphanous figure who will be placed in the mysterious setting we brought up on the first screen.
3. Move your mouse pointer to the very top of the screen, hold down the right button, and move over to the word "Brush," highlighting it in lavender; move down the Brush Menu to the word, "Load..." and release the right mouse button. A window will appear which is just like the "Load" window on the Project menu, except that the title at the top of this window will read, "Load Brush." The program automatically searches for a drawer entitled "brushes"; one is included on the Art Disk.

Find the title, "Ghost.bsh"; place the mouse pointer over its name, and click the left button; the name will appear in the black bar labeled "File," and when you click the left mouse button in the gadget which reads, "Load," the window will disappear, and the brush will soon appear on the screen. When

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the brush appears, it will be attached to the mouse pointer; not fixed on the screen.

4. Now make sure the background color of the brush will be transparent. To select this item, hold down the right mouse button and move your mouse pointer down the Brush Menu until the word "Trans" is highlighted; then release the button. You can also select by clicking the left mouse button while you're holding down the right mouse button and the word "Trans" is highlighted. An "X" will appear in the small circle to the left of the word, and the item will remain selected until de-selected using the same procedure. This function can be performed from the keyboard by holding down either of the "ALT" keys, and typing "R."
5. Return to the first screen by pressing "J" on the keyboard, or by moving down the Project Menu to "Alternate," and releasing the button while highlighting the word "Swap." The "alternate" screen is always the one you are not seeing at the moment.
6. Now you need to change the drawing mode to "Blend," so the brush can be set into the painting at a percentage, and our "Ghost" will look diaphanous. When the drawing mode selected is "Blend," the program will combine a brush with whatever happens to be underneath it when you click the left mouse button and set it onto the screen. The relative degree to which the background shows through the brush, or the brush dominates the background, can be determined by using the "Set" window:

Just beneath the word "Blend" on the Mode Menu you'll find the word "Set..." Still holding down the right mouse button, move down the menu until "Set" is highlighted; then release the mouse button. A window will appear, with the words "Blending Ratio" in the title bar.

The large HORIZONTAL rectangle represents the blending ratio between the background and the brush, from left to right. You can see a rectangle containing various shades of gray from white to black on the left side of this rectangle.

The large VERTICAL rectangle represents the blending ratio between the

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background and the brush, from bottom to top. You'll also see a rectangle containing various shades of gray above this rectangle.

These Gray Scale Gadgets symbolize the degree of blending, imagining a solid white brush over a solid black background; indicating the relative percentage of each using shades of gray.

The default positions are half-way; producing an image which is 50% background, and 50% brush.

Position the mouse pointer inside the gray scale gadget to the left of the Horizontal graph, and click the left button just above half (toward white). This will create a straight line representing the selected ratio all the way across the graph. Do the same at the Vertical graph.

Next, position the mouse pointer over the small gray square inside the black bar labeled "Dither"; hold down the left button and drag the gray square to the right until the numeral to the left of the bar reads "4."

When you have completed your setting process, click the left mouse button inside the "OK" gadget to return to the painting screen.

7. Position the ghost where the blending will be interesting, i.e., where a torch stand will show through, and part of the floor. Click the left mouse button to set the brush into the picture.

If you are unhappy with the outcome, select "un do" by placing the pointer inside the little gray square in the top right of the drawing tools section of the fast menu, and clicking the left mouse button; or by typing "U" from the keyboard. This must be done before you do anything else; it can only undo the most recent action.

You can experiment with the various settings described above until you are pleased with the appearance of the ghost in the painting.

8. Save the completed painting if you like. For the sake of brevity, I have described the saving process at the very end of this chapter.

USING PERSPECTIVE:

1. First, load the picture entitled "Floor.HAM.pic" from the Art disk in df1:. The procedure is the same as described in the tutorial above.
2. Move the Fast Menu to the bottom of the screen by placing the mouse pointer inside the drag bar, holding down the left button, and dragging the window as far down as it will go.
3. Select the Scissors Tool from the tools section of the Fast Menu. Place the pointer inside the gray square with the picture of the scissors in it, and click the left button. When you return to the painting area, a set of perpendicular lines will appear, intersecting in the center of the crosshairs.

Now we'll pick up the three torches as a brush:

Place the intersection of the perpendicular lines at the upper left corner of an imaginary rectangle framing the three torches; then hold down the *right* mouse button and pull the resulting box open until it frames the three torches; bases and all. Release the button. In a moment, the torches will disappear from their former location, and reappear attached to the crosshairs. You may notice some abnormal looking streaking of the image; never fear, this results from the HAM display protocol, and will be corrected when the brush is set back into the painting.

Move the pointer back to the Main Menu bar, hold down the right button to reveal the names of the various menus, go to the Brush Menu, and select "Trans" to be certain that the background of the brush will be transparent.

4. Place your mouse pointer in the Drag Bar of the Fast Menu, and hold down the left button to drag it back up to the very top of the screen. Notice that as soon as you move the mouse crosshairs into the Fast Menu, they become the shape of an arrow again, and the brush disappears. When you return to the painting area, your brush will reappear, along with the crosshairs.
5. Move your brush into the center of the floor area in front of the two large columns.

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6. Select "Tilt" from the keyboard by holding down an "Alt" key and pressing "T." This way you do not move the brush by taking the crosshairs to the top of the screen in order to access the Brush Menu from the Main Menu bar.

The word "Tilt" will appear under the crosshairs. In the Drag Bar of the Fast Menu, you'll see three "0"'s, and the words "Pitch" and "Roll" to their right.

6. We're going to create two rows of torches in perspective; one on each side of the area between the two large columns. The rows of torches should appear to be on each side of an aisle, and you are looking directly down the center.

When you hold down the left mouse button, a hollow rectangle will appear in place of the brush, representing it's dimensions.

First, "Roll" one side of the brush so that the rectangle appears to be in perspective, one side becoming smaller in the distance. To do this conveniently, lock the pitch capability by pressing the number "7" on the numeric keypad (which is on the right side of your keyboard). The word "Pitch" will appear white on a black background to indicate that it is locked.

I rolled the left side away from me, so that the center numeral (representing the degree of roll) read "-66." Hold down the left mouse button and move the crosshairs to the left until the center numeral reads "-66." Now lock the "Roll" capability by pressing the number "8" on the numeric keypad, and re-enable the "Pitch" capability by toggling the number "7" again. "Roll" should appear white on a black background, and "Pitch" should appear normal.

Hold down the left mouse button and move the crosshairs down until the numeral on the left reads "25." The bottom line of the rectangle should be about the same angle as the floor of the painting.

7. Press the space bar to draw the brush in perspective. On the Drag Bar you'll see the program counting the number of scanlines remaining to be computed before the new brush is displayed.
8. Position the brush so that the base of the torch nearest you is lined up with the near left corner of the base of the column on the right. Then click the left mouse button to set it in place.

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9. Next, move the crosshairs to the very top of the screen, hold down the right button, move over to the Brush Menu and then down to select "Flip"; then "Horiz" from the sub-menu. The brush will be recalculated, and you'll have the row of torches for the opposite side of the aisle.
10. Locate the new brush directly across from the one on the right, so that you have a mirror image; then click the left mouse button to set it into place. You should now have two rows of torches in perspective. True ... the torches do look flat, but the next tutorial should teach you how to create more 3-dimensional looking objects!

3-D SURFACE MAPPING:

Wrapping a patterned surface on a series of 3-dimensional shapes.

In this example we will learn to wrap a brush around:

- a tube;
- a cone;
- a ball;
- a cube;
- each separate side of a cube;
- an ellipse;
- a symmetrical free-hand drawn shape.

1. First, load the picture file entitled "Demopic.4." Follow the procedure you learned in the previous tutorials.
2. Next, grab the patterned square in the lower left side of the picture as a brush, the way you learned earlier. Use the left mouse button to pick up a copy of the square as a brush, without making it disappear from the screen (using the right mouse button to pick up a brush will lift it off the screen entirely, leaving the only copy attached to the crosshairs as a brush).
3. Now, move the crosshairs to the very top of the screen and hold down the right mouse button; this will reveal the Main Menu. Go to the word "Brush," highlighting it in lavender; the Brush Menu will appear below. Move down to

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the option "Wrap on"; the sub-menu will appear; select the first choice, "Tube," by highlighting it, then releasing the mouse button.

The brush will appear with the word "Tube" extending under the crosshairs. Hold down the left mouse button; a hollow rectangle will appear, having the same dimensions as the brush. Now, still holding down the left button, move the crosshairs toward the center of the brush. You are determining the width of the resulting tube. Make the tube no wider than half the size of the brush, or the effect of the wrap will not be very discernible; release the mouse button to begin the wrapping process. In a few moments, the brush will reappear as a 3-D tube, wrapped with the festive holiday paper.

If you would like to collect and compare the various 3-D shapes after you've wrapped the brush around them, switch to the spare screen by selecting "Alternate," and then "Swap" from the Project Menu, or by typing "J" from the keyboard. When the spare screen appears, locate the tubular version of the brush to one side of the screen (leaving room for several other shapes, soon to be created), and click the left button to stamp it into place. Then repeat the process to switch back to the original screen. The "alternate" screen is always the one you are not seeing at the moment.

4. Repeat the above process, selecting "Cone" from the sub-menu in the "Wrap on" option of the Brush Menu. Remember to pick up your brush using the *left* mouse button, so the original square of holiday paper will remain in the painting for further exercises.

When you hold down the left mouse button, a hollow triangle will appear. You can move the mouse toward the center of the brush to narrow the base of the triangle, but if you release the mouse button while the base is as big as the bottom of the brush, you will be able to see a more dramatic effect when the wrapping process is complete.

Use the alternate screen to add the cone shaped version of the brush to the collection.

5. Pick up your brush again, using the left mouse button; then repeat the above process, selecting "Ball" from the sub-menu in the "Wrap on" option of the

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Brush Menu. When the brush reappears, the crosshairs will be in the center, with the word "Ball" extending underneath.

When you hold down the left mouse button no hollow circle will appear until you pull the crosshairs outward from the center of the brush; then you can widen the circle until it reaches one of the dimensions of the rectangular brush. The circle will automatically stop growing before it would have become too large. Release the mouse button to begin the wrapping process.

The ornament you see in the upper left was created by the artist who painted this example, by wrapping the brush design around a ball, just as you are doing.

Now add the ball shaped brush to the collection on the alternate screen.

6. Pick up the brush again with the left button, and select "Ellipse" from the "Wrap on" sub-menu.

The crosshairs will appear in the center of the brush, and, as with the ball function, no hollow shape will appear until you pull outward while holding down the left button. You can create either a vertical ellipse (by pulling predominantly upward), or an horizontal ellipse (pulling outward). Once an edge of the brush is encountered, the ellipse will stop growing in that direction. You can still enlarge the ellipse in the other direction, until you reach that edge. This particular design would probably look most interesting on an horizontal ellipse, but you can do one of each, if you wish, and compare! Release the button to begin the wrapping process.

Use the alternate screen to add this brush to your collection.

7. Next, pick up your brush again, and select "Free Shape." The brush will reappear with the crosshairs in the middle right; when you click the left mouse button, a hollow rectangle half the width of the brush will appear, and the crosshairs will be in the center of the rectangle. This rectangle represents the right-hand side of a symmetrical shape. When the final shape is computed, it will consist of two halves: the one you drew, and it's mirror image on the left, forming a whole.

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You can move the crosshairs within the rectangle without holding down the left button. Position them wherever you would like to begin drawing your free hand shape; then hold down the left button, and begin drawing.

Wherever you happen to draw in the rectangle, the line will appear, and replace any line you may already have drawn in that area; therefore, you do not need to erase if you wish to change a portion of the profile you are drawing. Just redraw in whatever area you wish until the shape pleases you; then press the space bar on the keyboard to begin the wrapping process. This particular feature is so much fun, you may want to try several different free shapes, and add them to your alternate screen.

8. Next, pick up your brush with the left mouse button again, and select "Cube 3/4." The brush will reappear with the crosshairs in the center, and "Cube" written vertically underneath. Hold down the left mouse button, and the hollow outline of a cube in perspective will appear within the dimensions of the brush; move the mouse to alter the perspective of the cube until you are pleased; then release the button to start the wrapping process.

Again, add this new shape to your collection on the alternate screen (unless you've stuffed it to capacity with a collection of free-hand shapes!).

9. Finally, pick up your brush again, and select "Cube * 3." The brush will reappear with the crosshairs in the center, and the word "Cube" written underneath, just as before; but this time, when you hold down the left mouse button, a cube will appear which is large enough to hold a full reproduction of the brush on each of its three sides. Move the mouse until the perspective of the cube pleases you, then release the button to start the wrapping process. The final cube will show a full image of the brush, in perspective, on all three exposed sides.

Copy this last example to your alternate screen, and if you wish to save your collection of 3-D wrapped shapes, follow the procedure for saving your work which is described at the end of this chapter.

THE BALLOON TUTORIAL:

Creating a painting of a 3-D hot air balloon with basket, floating in a sky filled with translucent clouds.

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In this example we will practice:

- grabbing a brush from the screen;
- using the alternate screen;
- rotating a brush 90 degrees;
- resizing and reversing the brush;
- using the blend settings to provide a variable transparency of the entire brush;
- placing the brush into the painting in each of these different forms;

Then:

- grabbing another brush from the screen;
- assigning the colors used in the brush to the color registers;
- using the "transparent" option in the Brush Menu to make the background color of the brush invisible when placed in the spare screen.
- setting the "Luminosity" of the brush;
- mapping the brush around a 3-D object;
- using the line tool.

1. Move your mouse pointer up to the main menu, hold down the right mouse button, highlight the word "Project," move down the Project Menu until the word "Load..." is highlighted; then release the mouse button. The Load window will appear.
2. Load the picture entitled "Balloon.const.HAM.pic" by finding it's name in the large gray requester, moving your mouse pointer over the name, clicking the left mouse button (the name should then appear inside the black bar labeled "File"); then placing the mouse pointer inside the rectangle which reads "Load," and clicking the left mouse button. The window will disappear, and the picture should fill the screen in a moment or two.
3. Make the background color of the brush you're going to pick up transparent:
First, identify the background color of the present screen. Place the mouse pointer inside the large, vertically divided square (containing two different colors) to the right of the small colored squares; then click the left mouse button. This will allow you to pick a color on the screen which you designate as the background color. Move the pointer back to the screen; the word

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"pick" should appear beneath the crosshairs. Now, place the crosshairs within the background color of the screen (sky blue), and click the right mouse button. The right mouse button is always used to select the background color (the left is used to select the foreground color). The newly selected background color will appear in the right side of the vertically divided square (the current foreground color appears on the left side).

Second, make sure the designated background color will be transparent when you pick up a "brush." Hold down an "ALT" key while typing "R" from the keyboard, or move the crosshairs to the very top of the screen, hold down the right mouse button to reveal the Main Menu, move the pointer to the word "Brush"; then down to the syllable "Trans" and click the left button (or release the right button) while the word "Trans" is highlighted.

4. Move your pointer into the square showing the Scissors Tool, click the left mouse button, and move back onto the painting area. Now, position the perpendicular lines at one corner of the vertical cloud on the right side of the screen; hold down the left mouse button, and pull out the resulting box outline until it surrounds the cloud; then release the mouse button. A copy of the cloud will now be attached to your mouse's crosshairs.
5. Switch to the spare (alternate) screen by pressing "J" on the keyboard, or by moving the pointer up to the top of the screen, holding down the right mouse button to reveal the Main Menu, finding the word "Project" on the left side, moving down the Project Menu to "Alternate," moving to the sub-menu which will appear, and releasing the right button while highlighting the word "Swap." We'll use the alternate screen to paint the sky filled with clouds.
6. Move your mouse pointer to the color palette and select an appropriate shade of blue for the sky by clicking the right mouse button while your pointer is inside the chosen color square. The right mouse button is always used to select the background color. The new background color will appear in the right-hand side of the vertically divided square to the right of the small color palette squares. The small square containing the color you chose will be framed in black and white. The foreground color is always framed in solid white, and is chosen by clicking the left mouse button while the pointer is located in the color square.

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7. Your cloud will still be attached to your crosshairs. Now clear the screen (which will fill it with the currently selected background color of sky blue) by pressing the "DEL" key on the keyboard, or by holding down the right mouse button to reveal the Main Menu, finding the word "Project" on the left side, moving down the Project Menu to the first word, "Clear," and releasing the right button while the word is highlighted. A requester will appear, asking you if you really want to clear the screen. Place the pointer inside the "Yes" gadget and click the left button.
8. You may have to "remap" the colors of the brush, if they have been altered by moving from the original screen to a new one with a different palette. Move the crosshairs to the very top of the screen, hold down the right mouse button to reveal the Main Menu, move over to highlight the word "Brush," then down the Brush Menu to the word "Remap" and release the button. The program will take a few moments to recalculate; then the brush will reappear in its original color scheme.
9. Next, you need to rotate the cloud 90 degrees because we stored it on the work screen sideways! Decide which way you think the cloud would look best (of course, you can rotate it each way eventually for variety). +90 degrees will rotate it clockwise, and -90 degrees will rotate it counter-clockwise.

Hold down the right mouse button and move down the Brush Menu to " $\rightarrow$ Rotate"; then examine the sub-menu which will appear. Choose either +90 or -90 from the sub-menu by releasing the mouse button while the item is highlighted. The program will take a minute to recompute the brush; then it will reappear in its horizontal form.
10. Now we'll make the cloud-brush appear translucent; partially blended with the sky when you set it into the painting. Move the crosshairs up to the very top of the screen and hold down the right mouse button; then move the pointer to the word "Mode," and down past "Normal" (which should be the default setting, and have an "X" in the little circle to its left) to "Blend." Still holding down the right mouse button, click the left button while the word "Blend" is highlighted in lavender; the "X" will move from "Normal" to "Blend." Now move down to the word "Set..." and when it is highlighted, release the right mouse button. A window entitled "Blending Ratio" will appear.

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Move the mouse pointer to the Gray Scale Gadget on the left of the black rectangle labeled "Horizontal," and position it just below the pure white area at the top of the gadget (about 80%); then click the left mouse button. The horizontal white line will move to the new setting.

Do the same with the black rectangle labeled "Vertical."

Find the black bar labeled "Dither"; place the mouse pointer over the small gray square inside the bar, and hold down the left mouse button while moving the pointer all the way to the right along the bar. The gray square will move with the pointer, and the digits to the left of the bar should read "15." This maximum amount of dithering will make the clouds look fleecy.

Now move the mouse pointer into the "OK" gadget on the bottom left of the window, and click the left mouse button; the window will disappear, and you'll be returned to the painting screen. The cloud will remain attached to the crosshairs.

11. Position the cloud on the screen wherever you wish, and click the left mouse button. The translucent, dithered cloud will appear on screen as it is calculated, from top to bottom. If you're not pleased with the location or appearance of the cloud, type "U" from the keyboard to "undo" the operation. You can relocate the cloud and click it down again, or experiment with the settings in the Blending Ratio window and check the various results by clicking the brush into place and "undo"ing the operation until you're satisfied.
12. Now turn the original brush into a variety of clouds. Move the crosshairs to the very top of the screen, hold down the right mouse button to expose the Main Menu, move over to the word "Brush," and down the Brush Menu to "—>Resize," where a sub-menu will appear. Move down the sub-menu to "halve" and release the button. Allow the program to recalculate the brush. Then return to the Brush Menu as above, and select "Flip"; then "Vert" from the sub-menu. The cloud will appear upside-down. If you select "Horiz" from the Flip sub-menu, the brush will flip from left to right.

You can experiment with the various functions of the Brush Menu and produce many different sizes and shapes of clouds. If you go to the Brush

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Menu and select “—>Resize”; then “Free” from the sub-menu, the cloud will reappear with the word “Free” extending down from the crosshairs. Hold down the left mouse button, and a rectangle will appear, enclosing the volume of the original brush. As you move the mouse, the volume of the rectangle will change. When you think you’ve arrived at the desired size and shape, release the button; the program will take a minute and recompute the cloud.

Enjoy painting as many different clouds into the sky as you wish before proceeding to the next step: THE BALLOON!

13. Return to the first screen by pressing “J” on the keyboard, or by moving down the Project Menu to “Alternate,” and releasing the button while highlighting the word “Swap.” The “alternate” screen is always the one you are not seeing at the moment.
14. Move your pointer into the square showing the Scissors Tool, click the left mouse button, and move back onto the painting area. Now, position the perpendicular lines at one corner of the large, red and white striped rectangle, hold down the left mouse button, and pull out the resulting box outline until it surrounds the striped rectangle; then release the mouse button. A copy of the striped rectangle will now be attached to your mouse’s crosshairs.
15. Return to the Project Menu, and, holding down the right mouse button, move down the list to the phrase “Base colors”; then select “From brush” by releasing the right mouse button while the words are highlighted.

This copies the colors used in the brush to the Amiga’s color registers. They hold the 16 colors which will be the basis for the HAM calculations used in the painting. This way, we can stamp the brush down without creating any unnecessary (extra) fringe colors.

16. Return to the Brush Menu, move down to the syllable “Lum,” and release the right mouse button while the abbreviation is highlighted. The Luminosity window will appear.

For this exercise, we’ll leave the default Direction setting (set by moving the

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small gray square inside the black square labeled "Direction"); the light source is directly in front of the object. "Full scale" is highlighted (default setting) so the full range of brightness variations will be used to shade the object. We'll only change the intensity setting, so as to make the balloon appear a little brighter:

Position the mouse pointer over the small gray square inside the horizontal black bar labeled "Intensity"; hold down the left mouse button and drag the gray square to the right along the bar until the digits on the left read somewhere from "8" to "10"; then release the button. Now place the pointer inside the "OK" gadget and click the left mouse button. The window will disappear, returning you to the painting screen.

17. Again, go back to the Brush Menu; move down to " $\rightarrow$ Wrap on," and then to "Ball" on the sub-menu, and release the button. The crosshairs will then be located in the middle of the brush with the word "Ball" extending underneath. Hold down the left mouse button and pull away from the center of the brush; a circle will form, and widen as you move the crosshairs away from the center. The program will stop the enlargement of the circle when the circumference reaches the edge of the brush; you can settle on a circle smaller than the brush if you prefer. When the size of the circle pleases you, release the mouse button. This shape is large, and there are many calculations necessary to 3-D surface mapping with light dependent shading, so there will be a minute or two before the completed balloon appears onscreen.
18. If you are pleased with the balloon you've created, type "J" from the keyboard (or select "Alternate" and "Swap" from the Project Menu) to return to the other screen containing the cloud filled sky; then stamp the balloon into the picture (remember to leave space underneath for the basket!).
19. Type "J" from the keyboard (or select "Alternate" and "Swap" from the Project Menu) to return to the other screen containing the construction parts. You now know how to pick up a portion of the picture as a brush. Pick up the brown rectangle in the lower left corner; it will be used to make the basket of the balloon.

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20. Select "Wrap on"; then "Tube" from the Brush Menu. The brush will reappear on screen with the crosshairs attached to the upper right-hand corner; the word "TUBE" will appear beneath them. Hold down the left mouse button, and the brush will become a hollow white rectangle. Move the mouse to the left in order to set the width of the tube. It cannot be any wider than the original brush, so moving the mouse to the right will not change the dimensions of the rectangle. When you are satisfied with the shape of the tube, release the mouse button. A few moments later the new, tubular brush will appear.
21. Type "J" from the keyboard (or select "Alternate" and "Swap" from the Project Menu) to return to the other screen containing the sky and clouds.
22. Stamp the new brush under the balloon as a basket.
23. Now use the "Lines Tool" to draw ropes suspending the basket from the balloon. On the right side of the Fast Menu are the small gray squares representing the drawing tools. In the upper row, second from the left, is the "Lines Tool." Its symbol is the straight diagonal line. Place the mouse pointer inside the gray square and click the left mouse button, or type "L" from the keyboard to select it.

This tool enables you to draw a perfectly straight line between any two points on the screen. First, locate the crosshairs of the mouse pointer in whatever spot you wish to begin drawing your straight line; then, continuing to hold down the left mouse button, move the mouse to whatever location you wish to be the end of the line. Notice that you can experiment; moving the mouse all over the screen, and a straight line between your point of origin and your current position will be maintained. As soon as you release the left mouse button, the straight line will freeze into place. Remember, if you are dissatisfied with its position, you can remove the line from the screen by clicking on the "un do" gadget before performing any other operation, and try again!
24. At this point you should have a pretty respectable painting of a hot air balloon floating in a sky of fleecy clouds. If you would like to save it to disk, observe the procedure which follows the last tutorial.

“JIMMY IT UP!” OR: DOCTORING A DIGITIZED PHOTOGRAPH:

Modifying a photograph by altering the facial features and blending them into the original. Because this tutorial involves use of the interlace (320 x 400) mode, and the as manipulation of a large area of the picture as a brush, I believe memory of at least 1 megabyte will be necessary.

A certain good sport gave us a digitized photograph of himself to use in our demonstrations. We had a lot of fun with it, as you shall see, but apart from that, we discovered some useful and rather sophisticated techniques which might be enjoyed by our users.

Further, we appreciate not only the photograph, but the good natured sense of humor shown by it's donor, when he happened by later and saw what we were doing to his likeness; I think he deserves a purple heart! (Doctoring those faces on magazine covers as a kid was NEVER like this...).

In this example we shall practice:

- loading a picture with a different screen resolution;
- working in hi-resolution HAM mode;
- using one face to produce two very different characters;
- picking up a portion of the face as a brush, and wrapping it around a 3-D shape;
- blending altered features with the rest of the face by using the many shades of color found in a digitized photo.

1. Load the picture from df0: entitled “Jim.lace.pic,” by going to the Project Menu and selecting “Load...”; then finding the title of the picture in the window and selecting it, as you’ve learned previously.

You will be loading a picture with a higher screen resolution, so a requester will appear which reads: “Change screen? (320 x 400 lace)”; with a gadget on the left which reads “Yes,” and another on the right which reads “No.” Select “Yes” by clicking the left mouse button while your pointer is in the gadget, and the interlace picture will be loaded.

A digitized photo of a rather pleasant looking person will appear. Notice that the face is not looking directly at you; it is almost a 3/4 view. This allows us to

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use the different halves of the face to create two other individuals of unusual, and quite entertaining, proportions!

2. Pick up the right side of the face (the side which is on YOUR right) as a brush, using the *left* mouse button so as to leave the original copy in the picture:

When deciding where to divide the face, choose the area of the nose where the color is the most even from left to right, but as far to the left as possible.

This way, when you reverse the brush and line it up with the right side of the face, the nose will be as large as possible, the tip will still appear round, and the flesh tones down the length of the nose will blend more successfully.

3. Go to the Brush Menu and select "Flip"; "Horiz." This will give you a mirror image of the right half of the face; flipped on the "X" axis. Carefully line it up with the right half, covering up the original left half of the picture, and click the left mouse button to set it in place.

We'll doctor up the left side of the picture, where part of the original left side of the face is still showing, later on in the tutorial.

4. Switch to the alternate screen, using the "alternate; Swap" selection on the Project Menu, or by pressing "J" on the keyboard, and load "Jim.lace.pic" again.

Before you can copy the other half of the face and duplicate it, you'll need to make room by shifting the whole face to the left side of the screen. Pick up the whole face as a brush, using the right mouse button so as to pick it up entirely, and move it to the left until the ear is almost touching the edge of the screen. Click the left mouse button to set it in place.

5. Now, pick up the side of the face on your left as a brush, bearing in mind the same considerations regarding the division of shapes and color areas.
6. "Flip" this brush horizontally also; then place it over the right half of the face, matching it with the original left half, and stamp it into place by clicking the left mouse button.

Now you have two very different versions of the same face (an entertaining old trick I once learned in photography class). One face is strange and thin, the other ridiculous and wide. Now let's play with their features!

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7. Return to the first screen; notice that the thin face has no ears! In the original perspective, the ear on that side of the face wasn't showing. Go back to the wide face on the other screen and pick up the left ear as a brush, taking care to pick up only the ear and the hair above it; not any portion of the side of the face. Now return to the thin face and attach an ear and some extra hair to the left side.

You'll need to move the whole face to the left to make room for the ear on the right; so pick it all up as a brush using the right mouse button (so it will be removed from the screen), and reposition it in the center; clicking the left button to stamp it into place.

Next, pick up the ear on the left as a brush again (using the left mouse button so as not to remove it from the picture), and flip it horizontally to create the other ear; then attach it to the side of the face on your right.

8. The thin man's ears might look more interesting if they had longer ear lobes. Pick up just the lobe of one ear as a brush, then select "Resize"; "Double Vert" from the Brush Menu. When the lengthy lobe appears, position it over the original lobe on the same ear, taking the time to find the position where the colors and shapes blend the most successfully; then reverse the brush and place it on the other ear.

Careful observation will show that where you divide the area you pick up as a brush makes a difference in how well the altered section will blend with the original when it is re-attached.

9. Now use the left mouse button to pick up one of the eyes as a brush. When picking up the brush, make the rectangular frame around the area of the eye a small square rather than a rectangle, so that the eye will be centered when we wrap it around a ball in the next step.

Also, make the square as small as you can while still including the entire open eye. This way, you will not pick up any of the eyebrow area, which would be difficult to blend later.

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10. Go to the Brush Menu and select “—>Wrap on” then “Ball” from the sub-menu, or hold down an ALT key while you press “B” from the keyboard.

The brush will reappear with the crosshairs in the center, and the word “Ball” extending underneath. Hold down the left mouse button and pull outward; a hollow circle will appear; stopping when you reach the outer dimensions of your square brush. Release the button, and the new eyeball will be computed in a few moments. It should look rather bulbous and wide open.

11. “Trans” should still be in effect on the Brush Menu, and the round eye brush will not include any of the background color around the ball. Move the new eye over the original, and locate it in the position where it will best blend with the surrounding colors and shapes. Click the left mouse button to stamp it into place.

Remember, if you decide you’d rather position it differently after you’ve clicked it into place, just select the “undo” tool on the Fast Menu, or press “U” on the keyboard; then try again until you’re satisfied.

12. Now go back to the Brush Menu and select “Flip”; “Horiz” to create a mirror image to stamp over the other normal eye (Later, you can doctor the original face by just exaggerating the more open eye; leaving the other one looking slightly closed, for another humorous effect...: —).
13. Finally, pick up only the two front teeth as a brush; then go to the Brush Menu and select “—>Resize”; “Double Vert.” When the bunny teeth appear, locate them carefully over the originals and click them into place.

After you’ve altered the features on each of the faces, the final subject of this tutorial will be blending the new features with the rest of the picture. Since it will apply to every face you’ll be doctoring, I’ve saved it for last to avoid redundancy.

14. Return to the alternate screen, with the wide face on it.
15. Pick up both eyes together as a brush, including the eyebrows and the crowsfeet. Again, use the left mouse button so that you leave the original eyes in the picture.

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Select “—>Resize”; “Free” from the Brush Menu. When the brush reappears, the crosshairs will be at the lower right hand corner, and the word “Size” will extend below.

Hold down the left mouse button, and a hollow rectangle will appear, having the same dimensions as your brush. Resize the hollow rectangle by moving the mouse inward and upward so that the hollow rectangle is smaller and narrower by about 25%. When you think you’ve made a good guess, release the mouse button and allow the new eyes to be computed.

You will want to locate the new pair of eyes over the originals so that the crow’sfeet can be matched up as if they just continue outward. Don’t worry about the original set of eyebrows showing above the new pair of eyes. You’ll use the skin tone of the forehead to cover those later.

Some experimentation may be necessary. If you have resized the eyes too small, just select the scissors tool (or type “B” from the keyboard); pick up the original eyes, and try again.

Eventually, you will have a new set of smaller, narrower eyes which fit over the originals; looking as if the crow’sfeet continue on for about an inch and a half.

16. Next, use the left mouse button and pick up the mouth as a brush, leaving the original in the picture.

Go back to the Brush Menu, and select “—>Resize”; “Free” again. This time, make the mouth a bit wider and about 25% longer (so that all the teeth are longer, and the mouth is open farther). Experiment, until your new mouth just fits right under the nose, and the lower lip just touches the bottom of the picture. When satisfied, stamp it into place.

You now have a pair of very different, and strange looking characters!

17. Now you can blend the new features into the rest of the picture so they look as if the original photograph has never been altered. Here are some techniques I’ve learned:

- I. You can often use a portion of the face which is right next to the area you

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want to camouflage. Copy that section, and duplicate it over the area which needs to be blended.

On the wide face, I used the area of the forehead right above the original eyebrows to cover up the portion which was still showing after I stamped in the smaller eyes. Just pick up an area of the forehead which is about the same length and width as the area you wish to cover; then move it into place and stamp it down. It's amazing how well that section of forehead will blend in above the smaller set of eyebrows. You'll also see a dark, shaded area above the outer corner of each eye, at the temples; copy that and move it down, lining it up to continue the direction of the shaded area; blending the edges of the brush on each side.

- II. Use the magnification window to perform fine touch-up; blending the pixels and matching the colors of adjacent areas.

On the right side of the Fast Menu are the tool gadgets (little symbols in small gray squares). The third square from the right, bottom row, contains the symbol of a little magnifying glass. Place your mouse pointer inside this square and click the left mouse button to select the magnification gadget, or press "M" from the keyboard.

The little square will reverse colors: dark background with a light gray symbol inside; indicating it has been selected. When you move your pointer back to the screen, it will now be a little magnifying glass. Center it over the area you need to touch up; then click the left mouse button to bring up the magnification window.

When the window appears, you will see a moderately magnified version of the area you selected. Notice the gadgets on the bottom of the frame. To increase the degree of magnification, place your pointer over the "+" sign on the left side of the bottom of the frame, and click the left button; to decrease magnification, select the "-" sign; clicking the left button. The minimum degree of magnification can be accessed by selecting the syllable "Min;" the maximum by selecting "Max" and the intermediate degree by selecting "mid."

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If you need to scroll across the magnified area in any direction, select one of the arrows indicated on the right side of the frame, or press the arrow keys on the keyboard. To enlarge, reduce, or reshape the magnification window, place the mouse pointer over the gadget in the lower right corner of the frame, hold down the left mouse button, and move the mouse in whatever direction you wish to resize the window; a hollow rectangle will appear, symbolizing the size and shape you are creating. When satisfied, release the button, and the window will be redrawn.

You can also relocate the window by placing the pointer inside the “drag bar” at the top of the frame, holding down the left button, and moving in whatever direction you choose. When satisfied, release the button, and the window will be redrawn.

Magnification, and referencing what is inside the window to the unmagnified image, will help you to perform fine touch-up on the photo. Notice the subtle variation of color among the pixels. You can imitate the various combinations of colors to blend away the edges of the brushes you placed in the picture.

First, locate the magnification window over an area which needs to be touched up, i.e., an edge of a brush you’ve set into the picture. Use the scroll gadgets (arrows on the keyboard or on the right border of the magnification window) to relocate the window over the desired portion of the picture, or click the left mouse button while your pointer is over the “M” gadget on the bottom border of the magnification window; the symbol of a magnifying glass will appear; select the center of the desired area by positioning the magnifying glass, and click the left mouse button. The magnifying window will now display the newly selected area.

You can use the subtle combinations of colors adjacent to the edge of your stamped-in brush to camouflage that edge.

Position the mouse pointer inside the large, vertically divided rectangle to the right of the small color palette squares; click the left mouse button. When you move the pointer back to the painting area, it will have the word “Pick”

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attached to the crosshairs. Move the crosshairs into the magnification window, and center them over a pixel which has a color representative of the surrounding area; click the left button. The left half of the large, vertically divided, foreground/background color square will become the color of the pixel you've just selected, and it will now be your foreground painting color.

Use this color to repaint some of the pixels which compose the edge of the stamped-in brush. Notice the relative proportion of this color to the others around it; when you've created a similar pattern with that color, repeat the process of selection with another of the mixture of colors near the edge of the brush, and continue to repaint the edge with a series of colors from the immediate area until you have blended it in.

Another technique involves picking up a small group of pixels adjacent to the edge of the brush, and wrapping them around an ellipse, thereby eliminating the square corners which can make the pattern too recognizable. This small elliptical brush can be used to blend away a noticeable edge, also.

One more method I discovered as a tangent of the preceding two, is to pick up a small area of the painting right next to the edge I need to blend away; then move it directly over to the edge and stamp it down. Move along the edge to the next area and do the same; using each brush only once. This technique is slightly more time consuming, but it produces an almost imperceptible blending of the brush with the rest of the picture.

If you would like to see the aftermath of my tinkering with this same photograph, load the following picture files from the art disk which came with the program: *JimBunny.lace.pic*, *JimBloat.lace.pic*.

I haven't completed the blending process in all of the areas where I've set brushes into the pictures, (had to get this manual finished on time!), but you can see how well they do match without any fine touch-up. With a little more work the changes could be made just about imperceptible.

HINT OF MISCHIEF (chuckle):

If one were to doctor a photograph, and then print it out using a Polaroid™ Freeze, for example (which produces a Polaroid photo of your Amiga's screen image), one might produce a rather realistic (convincing!) photograph.

SAVING YOUR WORK:

Selecting "Save as..." from the Project Menu will bring up a window which reads "Save Picture" at the top. Right under this phrase, is a black bar labeled "Drawer." A "drawer" is the name of a directory in which paintings ("pictures"), can be saved. The name of such a directory must be entered into this black bar prior to attempting to save a picture to disk.

You can create special Directories (drawers) on your data disk in df1: (the external disk drive) naming them what you will. You'll find detailed instructions for doing so in your Amiga user's manual.

When you click the left mouse button while your pointer is in the "df1:" gadget, the program will examine the disk for any directories (dir), and list them in the large gray requester. Select the drawer (dir) in which you want to save your painting by clicking the left mouse button when your pointer is over the name of that (dir); the names of any pictures already stored in that drawer will appear in the large gray requester, and the name of the (dir) will appear in the black bar labeled, "Drawer."

Now save your picture by entering it's name in the black bar labeled "File." Notice that the cursor is already there; when you begin typing, the letters will appear. Then, when you click the left mouse button in the gadget which reads, "Save," the window will disappear, and your picture will be saved to disk.

If you have chosen not to create a special drawer (dir) for pictures, or have not created any directories at all on your data disk, the requester will just display the filenames of any brushes and pictures already on the disk, and the name of the disk drive being accessed will be the only data displayed in the "Drawer" bar. In this case, it would be helpful to create an appendix to the filenames which will let you know whether a filename refers to a brush or a picture. I've used the appendix, ".pic" for pictures, or ".bsh" to indicate a brush.

My experience in the use of this program has been an enjoyable one; I hope yours will be the same!

Heidi Turnipseed.



Appendix:

PHOTON PAINT'S FILE FORMAT

1. Photon Paint uses the IFF standard for saving and loading picture and brush files.

2. A Photon Paint picture file is composed of the following chunks:

BHSM — A private chunk which indicates the exact screen mode in which the picture was prepared. The structure of this chunk is as follows:

```
struct ScreenMode {  
    unsigned  is_lace      : 1 ,  
              is_pal       : 1 ,  
              is_overscan  : 1 ,  
              pad          : 13;  
};
```

Each of the above is a bit; when set, it indicates the picture was in this mode when saved.

BMHD, CMAP, CAMG — standard IFF chunks.

BHCP — A private chunk which contains the three lower rows in the fast menu's palette display. This chunk also contains Photon Paint's version number.

```
struct PaletteInfo {  
    int  Version;           Currently 0.  
    int  PaletteColors(48); The 48 color boxes in the lower three rows of the palette.  
};
```

Each word in "PaletteColors" indicates a color number from 0 to 4095 in the standard Amiga color notation.

BODY — standard IFF chunk.

3. A brush file is identical to a picture file, except for the private chunk BHBA, which replaces BHCP and contains information used by the program to compute its correct color values.

Photon Paint's File Format

4. Whenever the user performs a "Save Prefs" operation, a file "PP.Preferences" which contains the current settings of several items in the "Prefs" menu is created in the "S:" logical device (usually assign to "SYS:S"). The structure of this file is as follows:

```
struct pp_preferences {  
    LONG id;    Identifies this as a prefs file. Should be 'PPPF'.  
    UBYTE version;    Photon Paint's version number. currently 0.  
    BYTE pad;  
    UWORD pointer_ticks;    Mouse speed divider. Uses the same format as the  
                           Amiga Preferences values.  
    BYTE view_x_offset, view_y_offset;    Screen offsets in the standard Amiga  
                                         preferences format.  
    struct ScreenMode screenmode;    As in the BHSM chunk above.  
    The following entries are boolean (flags), indicating whether or not their  
    relative mode was set:  
    BYTE exact_color;  
    BYTE keep_undo;  
    BYTE keep_brush;  
    BYTE load_prompt;  
    BYTE coordinates;  
    BYTE follow_mouse;  
};
```




